AGRICULTURAL WAR-BOOK

PATRIOTISM and PRODUCTION

More than Usual

Published by direction of
HON. MARTIN BURRELL, MINISTER OF AGRICULTURE
Ottawa, Canada. January 1915

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THE PRESS

The uncredited notes and extracts printed in this Hand Book have been taken from the agricultural and daily newspapers of Canada and other reliable sources.

This material has been prepared and collected for the use of instructors and for the press of Canada. Papers having rural circulation are urged to co-operate with the Departments of Agriculture by using this material freely and frequently. Let every one help "more than usual."

A MESSAGE TO THE FARMERS OF CANADA

Approximately twenty million men have been mobilized in Europe. A large proportion of these have been withdrawn from the farms of the countries at war. Even in neutral countries large numbers of food producers have been called from the land to be ready for emergencies. It is difficult for us to realize what will be the effect on food production through the withdrawal of several million men from all the great agricultural countries of Europe. These millions cease to be producers, they have become consumers;—worse still, they have become destroyers of food.

While we all deplore this war, we believe that the present crisis will be productive of good results toward Canada. Business men and the rank and file are uniting in showing their heroism in every way. They are animated with a spirit of loyalty and devotion which will result in the building up of a greater Canada, a greater expansion of manufacturing industries and the development of a new field for our commerical activities.

Should the war continue into the summer of this year the food production in Europe cannot approach that of normal years. Looking at the situation in even its most favourable light there will be a demand for food that the world will find great difficulty in supplying. Canada is responding promptly to the call of the Motherland for men and equipment. Britain needs more than men, she must have food,—food this year and food next year. We are sending of our surplus now. We should prepare for a larger surplus this year and next year. The Government is strongly impressed with the desirability of increasing the crop acreage in Canada. The Canadian farmer, earnestly bending all his energies to increase the food supply for the Britisher at home and the British soldiers at the front, is doing his share in this gigantic struggle of the Empire.

I would urge the farmers to do their share in helping to assist the people of Great Britain, who for many years have borne the burden of a heavy tax for the maintenance of a great navy, in preventing them from suffering want or privation.

Do not sacrifice your live stock during the war crisis. If farmers ignore this warning the day will come when they will regret having depleted their breeding stock through lack of patriotism to Canada.

Apart from the practical certainty that wheat and other foods this year will yield large financial returns to the producers, there is the great fact that the Canadian farmers who, by extra effort, enlarge their wheat and other field crops and increase their live stock products, will be doing the best thing possible to strengthen the Empire in its day of trial.

MARTIN BURRELL,

Ottawa, 1st January, 1915. **Minister of Agriculture.**

PATRIOTISM AND PRODUCTION

"More than Usual"

RIGHT HON. SIR ROBERT BORDEN

In the British Isles military preparation has been imperfect because development has proceeded along the paths of peace. The instinct of the British people is against militarism, and great standing armies are not viewed with favor.

But in the British Isles and her self-governing dominions alone there are at least sixty millions of people, a population nearly equal to that of Germany. If our preparation for the struggle was insignificant compared with that of Germany, let us not forget that her resources are insignificant compared with those of this Empire. There are many things that count besides armed forces in the field. In the organization of modern war all the nation's resources must be reckoned with. Consider those of Canada, which even during the coming war can supply food products to an almost unlimited extent.

The unity of purpose inspiring the British dominions and their participation in this war upon so vast a scale has amazed the Prussian war lords. Also it has shattered their confident belief that the military resources of these dominions were entirely negligible. There is but one way to deal effectively with the Prussian gospel of force and violence and the Prussian ideal of absolutism. It must be smashed utterly and completely. The sooner that is accomplished the better for the German people and for all the nations. Canada joins whole-heartedly in that great task. What has been done is known to all. What remains to be done shall be limited only by the need.

It is within the bounds of probability that the four free nations of the overseas dominions will have put into the fighting line 250,000 men if this war should continue for another year. That result, or even the results which have already been obtained, must mark a great epoch in the history of inter-imperial relations. There are children within sound of my voice who will see the overseas dominions surpass in wealth and population the British Isles; there are children playing in your streets who may see Canada alone attain that eminence.

CANADA'S DUTY—PRODUCTION

HON. W. T. WHITE,
MINISTER OF FINANCE.

Mysteries of Exchange.

With respect to trade and commerce, there is only one aspect with which I intend to deal. It is the most outstanding feature of the present situation because it has a direct bearing upon economic conditions and economic policy. I refer to the international aspect of our trade, and in dealing with it I shall treat briefly of the principles governing international exchange, our borrowings abroad, and the state of our foreign trade. The currency of Canada, so far as domestic transactions are concerned, consists of paper money redeemable in ordinary times in gold and bank cheques which call for credit which is convertible into gold if required. That gold is seldom required makes modern banking possible. But once we get outside the limits of Canada our paper money or local bank credits will not serve to pay our debts to foreign creditors. We must pay either in gold or in exchange which is the equivalent of gold. Exchange is therefore the currency of nations, the medium through which they pay their debts. It is founded principally upon the volume of international purchases and sales of commodities, upon borrowings and many other minor factors. If a nation owes a balance to another nation and is unable to pay it directly or indirectly in products, services, interest upon investments, or otherwise, she must pay that balance in gold. Until the balance is redressed she must export her gold. This is preliminary to some remarks I desire to make as to the so-called "balance of trade" against Canada. This adverse balance of trade against Canada mounted in the fiscal year 1912 to over $225,000,000, in 1913 to $300,000,000, and in 1914 to $180,000,000. How did we pay it? We did not export gold, and yet we managed to pay these huge balances representing the difference between what we sold and what we bought. We also managed to pay interest estimated at $135,000,000 a year upon Canada securities held abroad. The answer is that we paid interest and balance of trade by borrowing. Canada for years past has been borrowing at the rate of two or three hundred million dollars a year principally in Great Britain. By exchange operations through New York this borrowed money paid the balance of trade which we owe United States. The chain was this: United States owed Britain, we owed United States, we borrowed from Britain. We paid United States by drafts on London. Those drafts representing our borrowings there paid *pro tanto* the balance owed by United States. So long as our borrowings were for productive undertakings the balance of trade against us was not cause for concern. If the borrowings had been for non-productive consumption there would have been cause for concern. In so far as the enterprises into which these borrowings have gone are productive, the result of the borrowing is national gain. The only question that arises is that of payment of interest which Canada can without doubt meet.

Imports with Borrowings.

"Now, it must be borne in mind that if a nation borrows it must import. You can either say that you borrow by way of import or that your importations represent in part at least your borrowings. Otherwise, you would import your borrowings in gold, which no lending nation could permit you to do. Canada has borrowed nearly three thousand million dollars in Great Britain—four times the amount of gold in the United Kingdom. The conclusion clearly is that to obtain your borrowings you must import commodities.

"At the outbreak of the war Canada was borrowing at the rate of thirty million dollars a month, or say a million dollars a day, chiefly from Great Britain. This money so borrowed represented the proceeds of Dominion, provincial, municipal railway, industrial, and other securities sold to investors abroad. The war put an immediate stop to this flow of money to Canada. The stream was cut through as with a sword, and the nation

had at once to adapt itself to the new condition. The period of readjustment has been painful, but has proceeded so favorably that the President of the Bank of Montreal was able to say to his shareholders a few days ago that business conditions are fundamentally sound throughout Canada.

"That we have been able to withstand the shock of this world-shaking catastrophe and recover so quickly is to me nothing short of marvellous, a conclusive proof of the fundamental soundness of our country and its institutions, an unqualified tribute to the prudence and energy of our people and an unmistakable earnest and augury of our future progress and greatness. Let me mention a few of the elements which have entered into the solution of the problem of withstanding the shock of the sudden cessation of the money-flow which has enabled us in the past to take care of our adverse trade balance. Firstly, the instinctive caution of the Canadian people at once counselled prudence in commitments. There ensued a contraction in finance and trade to meet the altered conditions. The tree bowed before the blast but did not break. The war created a higher range of prices for our farm products. The people under the influence of thrift consumed less, in other words bought less both at home and from abroad. Consuming less we have increased our exports and diminished our imports. The Dominion Government is the greatest sufferer by this because its revenues, based upon imports, have experienced heavy decline. But the result is the adverse balance of trade is diminishing every day. Let me give you some figures. In April last our imports were 66 per cent. of our total trade; in May 59 per cent.; in June 62 per cent.; in October 45 per cent. Our exports for October were fifty-one million dollars and our imports forty-three million dollars. We are overtaking our adverse trade balance. From April 1st, the beginning of our fiscal year, to October 31st we had an excess of imports over exports of $56,000,000, while for the same period of last year the excess was $141,000,000. Another factor which will materially help us is our borrowings in London for war. War is our first business until it is over. No matter what interests suffer we must see to it that we make war with all our power and resources of men and money. That is vital. Fortunately it is not necessary to elaborate that point before a Canadian audience, let alone a Canadian Club. We shall borrow probably a hundred million a year, the greater part of which will be spent here. That borrowing is gold—the equivalent of exchange—so far as it is spent in Canada. Then there are the orders placed by British, French and Russian Governments. The funds for those orders are also gold. Then there will undoubtedly be borrowing abroad on a reduced scale as money markets become easier, as is now their tendency. London may within a few months resume lending. What a marvel is Britain to-day, financing the war out of her savings and with a margin left over for investment! No doubt United States will purchase some of our high-class securities, because, as I pointed out, we cannot buy unless we borrow or sell and we buy more from the United States than from any other country. Next year our agricultural production will be immensely increased. Every man with a plot of land should plant it next spring. Our exports will thus be greatly swelled. By all these means Canada is taking and will take steps, no doubt unconsciously to the great body of her citizens who work by sure instinct, to meet the subversive conditions created by the war and the large adverse trade balance without resorting to gold exports. In considering this question of imports and exports I have been surprised to learn how admirably Canada has stood the strain as compared with other nations. The figures show increases or decreases over the same month of the preceding year. In August the United States' imports declined five per cent.; Great Britain's imports 24 per cent; Canada's imports 19 per cent. In September the figures were 18 per cent. for United States, 26 per cent. for Great Britain and 19 per cent. for Canada. In October Great Britain's imports declined 28 per cent. as compared with Canada's 20 per cent. The figures for United States are not available.

Canada's Exports go on.

"In exports the figures are more striking. In August the exports of United States decreased forty per cent., of Great Britain forty-five per cent., while Canada's increased 17 per cent. In September Canada held her own, United States declined 28 per cent. and Great Britain 35 per cent. In October our exports fell off 14 per cent. while Britain's declined 36 per cent.

"From all the facts which I have laid before you it is apparent that we have great cause for thankfulness. We may have a more or less trying period to go through before the light of peace again breaks, but I believe it will be a briefer period than we dared to hope. In the meantime let everybody emulate the spirit of the men at the front and the noble self-sacrifice they are making by doing what he can to alleviate distress and relieve unemployment at home. The made-in-Canada movement is undoubtedly based upon a strong instinct of the Canadian people—that by producing what we are in a position to grow and manufacture for our own needs we shall assist in meeting the adverse balance of trade which only becomes formidable when we are cut off from the money markets of the world for the funds required for our legitimate requirements as a rapidly growing and economically developing country—of untold and unlimited resources with but three requisites for their development, capital, enterprise and immigration. The war has seriously interrupted the flow of capital and immigration. In order under this condition, to meet our interest payments abroad, sustain our share of the burden of the war, and promote to the greatest possible degree prosperity throughout the Dominion, it is the duty of all Canadian citizens to co-operate in producing as much as possible of what can be used or sold. For Canada at this juncture the watchword of the hour should be production, production and again production.

HON. JAMES S. DUFF,

MINISTER OF AGRICULTURE, ONTARIO.

I hold that the man who joins in the effort to keep up an adequate supply of foodstuffs in time of war is rendering service to his country only second to that being rendered by the man on the firing line.

This war has shown, even in its very early stages, the absolute interdependence of one nation upon another. Consequently it is impossible to dislocate production and industry in one country without it being felt in another. The fact that millions of men have been taken away from production in Great Britain and in most of the countries of the European continent means that next year there will be a very strong call to make up the foodstuffs which these countries have in the past supplied.

Fortunately situated as we are far from the actual theatre of war, free as we are from having our lands devastated by the march of millions of men, I think that all who are on the land should do their best to see that the Motherland shall not suffer for want of food.

There will undoubtedly be need for foodstuffs along many lines in addition to wheat, such as potatoes, beans, oats, dairy products, live stock and poultry. I would like to point out that during the past season there were over 3,300,000 acres of land devoted to pasture. Now that there is every prospect of a good supply of labor, I think a great deal of this land could with advantage be broken up and put into crop. Aside from the question of price, it is undoubtedly the patriotic duty of every farmer to do his best to help in relieving the Mother Country from any occasion to worry over the food supply either of the men at the front or those at home. Incidentally it may also result in establishing trade connections which will be of great value long after the war is over. This can best be done by using as large an acreage as possible and by adopting the best methods of cultivation available.

HONOURABLE G. H. MURRAY,
Premier of Nova Scotia.

The war now raging is certain to cause a heavy decrease in the production of food stuffs in Europe during 1915. All the able-bodied men of France, Germany, Austria and Russia are engaged in fighting. The principal grain fields of Central Europe are being destroyed by marching armies. The grain fields of Europe in the hands of women workers will yield only a small percentage of the grain required for European consumption. The same condition applies to all other farm products employed to sustain life in man and beast. Whether this war will prove to be of short or long duration it is certain there will be a very serious decrease in the supply of food and fodder in Europe, for a long time to come. It is stated that of the 650,000,000 quarters of wheat yearly produced in the world, 350,000,000 are grown in the countries now at war.

Nova Scotia, owing to its comparative nearness to Europe, is a natural base of supply for the products that will be most sorely needed. Agricultural experts who have looked over this province have always been impressed with the great possibility for increased food production on our farms. There are hundreds of acres of land that have been either down to hay for a great many years or have been in pasture, that can be plowed up, sown to oats, wheat or barley and seeded down to clover and timothy to the benefit of the farmer even in times of peace. But now the present crisis demands that every effort should be made to increase the food supply.

Farmers of Nova Scotia, this is your hour of opportunity. Remember it is the products you can produce that will be in greatest demand—grains, roots, bacon, pork and beans and apples. I would urge those of you who are now plowing your lands to plow still larger areas, and I would strongly advise and urge those who have not yet begun to proceed to the work as promptly and with as much diligence as possible.

A solemn duty has been laid upon your shoulders as farmers. You are expected to enlarge the output of your farms while not only maintaining but wherever possible increasing their productive power. I cannot emphasize too strongly the fact that this work is just as truly practical patriotism as is the work of the soldier in the trenches. Our kinsmen in the Motherland have to be fed, so do also the people of the countries devastated by war. You in peaceful Nova Scotia are now in a position to do much for the cause of humanity and for the enduring benefit of our Empire.

HON. GEORGE LAWRENCE,
Minister of Agriculture for Manitoba.

Our country is in the throes of a terrible war—forced into it honorably. The peace of the world for centuries to come is at stake and in this extremity the weaker nations have turned naturally to Great Britain as the champion of human progress and of unborn generations. As a loyal component of the greatest Empire ever known, Canada is at war, and it is the duty of every true Manitoban to stand shoulder to shoulder in the present crisis.

Gentlemen, the faces of the nation are turned towards YOU. All eyes are expectantly upon you; for at such a time the Master of the Soil is the Master of National Fate. War has a rapacious appetite, and great quantities of food are required not only while actual hostilities endure but long afterward while the consequent waste is felt.

I feel that the farmers of Manitoba can be relied upon to the last man. I would urge you all to concentrate your attention upon increased production of grain, livestock and dairy products. Enlist every available acre of your land in your country's cause by preparing it carefully for crop production. It is patriotism which will bring you manifold returns and greatly relieve the general situation.

Willing farm help can be obtained from the ranks of the unemployed for small wages and board. Many of these men and women have had agricultural training and the others are alert to learn. Lack of

help need not be anticipated, and during the fall and winter months every farmer should seize opportunity to make full preparations for a vigorous spring campaign.

Get as much land ready as possible.

Get your repairs done.

Increase your livestock.

My Department will be glad to receive applications for farm help and to co-operate with you all in a distinct forward movement. Let us know your requirements.

HON. W. R. MOTHERWELL,
MINISTER OF AGRICULTURE FOR SASKATCHEWAN.

With the great European nations warring against each other, and tragic events of daily occurrence, we of the West, following our peaceful agricultural calling, find our perspective undergoing a change.

Germany, Austria-Hungary, Russia, France, Great Britain, all these countries in normal times, produce only a portion of their own foodstuffs, and Belgium is principally a manufacturing country. Therefore, we may well ask ourselves: "Who is going to feed the world?" and what greater part can we play than we are playing in providing supplies for the front, and thus further, and to the utmost, assist our struggling armies until victory crowns their efforts in this terrible conflict.

Essentially a producer, Saskatchewan is being called upon to increase her share in the work of production, and she will rise to the occasion by prudent and energetic action. It may not be out of place then, on the threshold of a new year, to consider some of the ways and means by which Saskatchewan can measure up to its new opportunities and responsibilities.

Methods

First of all, it may be well to take a glance at our methods of soil cultivation. These of necessity vary in different parts of the Province, but a rule to observe throughout the Province generally is to not over-reach. A tendency to plunge has been an outstanding weakness in Western agriculture in the past, and now with war prices prevailing and many well intentioned advisers in other walks of life urging the farmers to grow more wheat, there is a natural temptation to again spread out over much. The past season has, surely, once more taught us that increased acreage does not necessarily mean increased production. Increased acreage at the expense of the acreage in summer fallow is far more apt to eventually decrease production rather than increase it. It will be very questionable policy to risk too much on next year's crop, forgetful of proper preparation for the years to follow. More and better tillage is almost always in order, but more acres can prove satisfactory only when handled properly.

Live Stock

But, in paying closer attention to cultural methods we must not overlook the demand for live stock. Many new settlers will come to our Province as a result of the conflict in Europe. They need all classes of live stock. Shall we be ready to meet the demand without depleting our own breeding stock? Our ideal should be "some stock on every farm." The farmer on the open prairie with this ideal in view should strive to make preparations in the way of equipment. Shelter belts will be required and barns, fences, and a sufficient water supply needed. It will be worth while as a permanent investment. But a word of warning regarding hog raising. It is a mistake to rush into hogs simply because the market is improving or rush out because it is going bad. A few brood sows should be kept the year round on every farm. They become an economic factor, but to flood your yards with more hogs than you have feed for is to court disaster.

With the terrible slaughter of horses attendant on military operations, and the tendency to smaller farms, the way points to the breeding of more horses, even though prices have recently sagged. We shall then be placing ourselves in a position to reap benefits that will arise from the future demand for horses as

well as providing in the wisest way for our own future farm power requirements.

The great call for warm clothing for the troops engaged will diminish the stock of woollen goods. Sheep, therefore, should have a definite place in our policy of increased production. It is gratifying to know that the number of farm flocks increases each year.

Check Wastefulness and Give Better Service

Not alone by stimulating our fields to greater production and improving our live stock can we help to meet the present demand for foodstuffs, but also by taking better care of our farm equipment, and eliminating much of the waste that we have grown to look upon as inevitable to pioneer farming with a full head of steam on.

The farm and domestic labour problem has noticeably improved during the past year, but all of us who are called upon to render service for hire might cast about for ways of giving more efficient and less wasteful service and thus increase the sum total of our productivity.

I have said our Province will rise to the occasion, and I firmly believe the need will stimulate our farmers to greater and more diversified activity. The President of the great nation to the south of us has said: "Profits are legitimate only when they come from service." Saskatchewan can in these ways serve the Empire and also reap legitimate profits thereby. But don't forget that sowing for the highest possible patriotic motive will not ensure corresponding reaping unless accompanied by proper and timely tillage.

HON. J. A. MURRAY,

MINISTER OF AGRICULTURE FOR NEW BRUNSWICK.

The Empire's need at the present moment is quite apparent. Many thousands in Great Britain have gone to the front, leaving behind those who are dependent upon them. These people must not be neglected, and England naturally turns to the agricultural portions of the Empire, than which there is none greater than Canada, to assist her in supplying the wants of these people. I might point out the fact that the answer of the British Government to every province in Canada, when making an offer of a gift of food to the Empire, has been that the offer was thankfully received and the gift would be most gratefully accepted. This is an indication that, even thus early in the struggle that is taking place, the importance and the necessity for food supplies are recognized by the authorities in England.

During the last few weeks Canada has sent many thousands of her young men, volunteers for active service in Europe. Her response to the call "To Arms" was splendidly spontaneous and fills us all with pride for the brave men who have gone to aid the Motherland in this hour of her need. We delight to give expression to the tribute of praise, to the pride that we feel at this generous response from the highest type of Canadian manhood.

While, however, we honor the brave we must realize that, as you have so clearly indicated in the article referred to, assistance can be given England at this time in other ways than that of bearing arms. One of the most effective means by which the people of New Brunswick can at the present time give evidence of their loyalty and their desire to assist is by a united effort to put under cultivation all the available farm land possible, in order that we may do our share towards relieving the burden by being in a position to supply those who are nearer the scenes of active service.

To the farmers of New Brunswick, this presents an opportunity, not only for patriotism, but for future profit to themselves, by placing them in a position to supply a market that will be open for a long time to come.

I am glad, in this way, to appeal to the agricultural classes of New Brunswick to unite with those who have in ways that are more apparent, gone to the service of the Empire, and lend themselves to the cultivation of the large acreage in this province which has heretofore not been utilized in this way.

The New Brunswick Department of Agriculture will facilitate this movement.

HON. DUNCAN MARSHALL,

Minister of Agriculture for Alberta.

Probably the greatest danger to the farmer at present is that of being stampeded into a line of operation that looks like a good thing in the immediate future, but which in the end may not prove to be either the most profitable or the most desirable line of action. Farmers are being advised to make a special effort to grow grain to feed the war-stricken countries. It will be good business for every farmer to get every acre he can under crop next year, as the price for grain will not only likely hold good, but will in all probability go higher; but it is only good business to do this when you can get your crop in under good conditions. Don't let any farmer be persuaded next spring to sow to grain the field that he knows should be summer-fallowed. It would be better to put the extra time and labor on the land he has in good cropping condition; rather give it a few extra strokes with the harrow, making the seed-bed as perfect as possible, thus ensuring a better crop on clean, fresh land, than to spend time rushing into crop land that is dirty and worn, and that needs a summer's work to fit it for growing a reasonably good crop.

This has been the finest fall for getting work done that Alberta farmers have experienced for some years. There has been several times as much fall plowing done this autumn as last year, summer-fallows have been better worked, there has been abundance of moisture and the land is in an ideal fall condition, so that with good surface cultivation in the spring, the crop should be seeded under the most promising conditions.

My suggestion, under these conditions, is to get this land under crop and plant it in the best possible way. Use the drag harrow and the packer liberally and, particularly in the South, do not be afraid to use the harrow after the crop is up, and spend extra time on this land that promises real production instead of wasting time getting fields into crop that are unfit and that would only give a small yield under ideal weather conditions or would be a failure in a dry summer, thus losing to the farmer, not only his seed but his chance to summer-fallow this land and to have it ready for a bumper crop the following year. In other words, the farmer who will be the best off in the long run is the man who will not allow the present high prices to turn him from the best methods of soil cultivation he knows, and who will keep steadily on improving his system of farming. He may be able to crop more now, as labor will be cheaper, and he should if he can, but he must not sacrifice efficiency in farm work simply to get a larger area seeded.

What I have said about cultivation of the soil is also true of live stock. One of the things I fear is that farmers may be tempted to sacrifice their live stock on account of the high prices of grain. Don't do this. Live stock is the foundation of all permanently successful farming to-day, just as surely as it has been in the past. Circumstances seem to have conspired at the present moment to depreciate live stock prices, but just as surely as the packers have pounded down the prices at the present, because of the disposition of the farmers to sell off hogs and cattle rather than feed high-priced grain, just so surely will they be compelled to pay good prices for hogs and cattle a short time hence. The world's supply of meat cannot be produced as quickly as a supply of grain, and the man who stays with the live stock business will win in the end.

This same condition holds good respecting horses. The draft horses of Belgium and France will be almost annihilated, and the farmer who is raising a few draft colts now will find a market that will be attractive and profitable before long. If the war lasts for any extended time all the light and nondescript horses will be left in the trenches and the demand for good farm and work horses will be abnormal.

In conclusion, the business of the farmer in Alberta at present is to keep on improving and increasing the cultivation of his land and the quality and number of his live stock; putting a little extra effort into his farm operations because of the great crisis through which we are passing

but at all times keeping his head and farming for future as well as present results.

SIR GEORGE PAISH,

FINANCIAL ADVISER TO GREAT BRITAIN.

It is evident that the railway machinery created to take care of the production of the country is sufficient to deal with at least twice, if not three times, the existing output, and it is obvious that the burden of interest upon the immense amount of capital supplied will be a heavy one until the productive power of the country is greatly increased. I am convinced that every possible effort will be made by all concerned—the Canadian Government, the Provincial Governments, the municipalities, the great railway companies, bankers, traders, and others as well as by British investors—to increase rapidly the agricultural and mineral output of the country upon which the welfare of the Canadian people, both individually and collectively, absolutely depends, and that the effect of their concerted effort will be so great that the country will carry with safety a burden of interest which might otherwise overtax its strength. It is, however, of the greatest possible importance that the work of directly increasing the productive power of the country by placing a larger proportion of the population upon the land and in the mines should be carried out with the least possible delay.

W. E. SCOTT,

DEPUTY MINISTER OF AGRICULTURE, BRITISH COLUMBIA.

Farmers of Canada, now is your golden opportunity. As a consequence of the war, the world's supply of agricultural products is being rapidly depleted, and the struggling nations of Europe must look to other countries for a large amount of their food-stuffs. Canada by her geographical position has a great advantage. Increase, therefore, your crop acreage, and also increase production by adoption of scientific methods. Grow more grain, keep more and better stock, and thus do your share towards the rehabilitation of the countries that have been ravaged and laid waste by the barbarism of war.

HON. JOS. E. CARON,

MINISTER OF AGRICULTURE FOR QUEBEC.

In a public address delivered at the Sherbrooke fair, the Honourable Mr. Caron, Minister of Agriculture for Quebec, spoke about war and agriculture. He stated that the time was particularly well chosen for helping educational work in agriculture. Never perhaps for the last forty years had the farmers such an opportunity as the present one, and it is to be hoped that they would all strive to increase production, not only in their own interest but also out of their loyalty to our country and our mother country. He also spoke of the gift of cheese made by the Province of Quebec and stated that the Prime Minister had been told in England that the Allies would surely be victorious if there was no shortage of food.

Even after the war, there will be a greater demand than ever for agricultural products, for the good reason that the area where hostilities are being carried on will not produce next year the five hundred millions of bushels of fall wheat that it has been yielding annually. Mr. Caron also expressed the belief that poultry breeding in the province could be rapidly increased.

HON. M. McKINNON,

COMMISSIONER OF AGRICULTURE, PRINCE EDWARD ISLAND.

Our people should remember that they are a part of the Empire. They should realize the importance of their citizenship—the tremendous duty that devolved upon every one of them to do their share in this great crisis. It made no difference whether it was in the fighting line or working on the farm or in the factory, the man who failed to do his best was just as great a failure as the man who turned his back on the enemy and ran away. They were slow to realize this fact to the full, and it was only when their own friends and those near to them began to fall that it was brought home to them that the Empire was at war and that every one of them was a fighting citizen in support of the Empire. They were not doing their duty unless each one realized that he was as much charged with the success of the Allies as if he were fighting at the front.

PART II.

GREATER AND BETTER CROPS IN 1915

J. H. GRISDALE, Director, Experimental Farms.

The usual measures of crop production in normal years are the industry and ambition of the farmer and the prospective profitable market for the products of his labour.

The Canadian farmer of to-day is not lacking in industry, the markets, both immediate and prospective for all the products of his energy have never been better, and to these may be added the call from the motherland for help such as can be given by our farmers and by none better, if they will, in the way of plentiful supplies of foodstuffs of all kinds for man and beast. Given the effective combination of ability to produce and profitable demand for the product, with the further inspiration of patriotic necessity, surely such a year of farming activity may be anticipated for 1915 in Canada as has never before been seen and as will long live in our annals as the banner year in Canadian Agriculture.

Canadian wheat, coarse grains, meats, dairy products and hay are certain to be greatly in demand by Great Britain and her allies during the period of this war and for many months thereafter. These products of our farms are such that, for the most part, but little time is needed to permit of a material increase in the output. True, only a slightly larger acreage can be devoted to each or any one of these crops than was contemplated or planned for in the fall of 1914. Fortunately, however, or possibly we should say unfortunately, the return per acre and therefore the total return of cereals and hoed crops in the country, very largely depends upon cultural methods practised by the individual farmer, as well as upon the area sown thereto. Hence, with every farmer doing his grain seeding better than ever before, handling his hoed crop as it always should be, but seldom or never is, in the way of maintaining a mulch and keeping free from weeds, such an increased return per acre may be anticipated in this country as would astonish the farmer himself and go far toward enabling this country to meet the extraordinary demands the motherland is sure to make upon us.

In crop production, thorough work practically always pays and pays well. A close observance of the following points in connection with cereal and hoed crop production in 1915 would work wonders. Let us all try them.

(1) Make every preparation possible for seeding long before seeding time comes around. (a) Clean, test and bag your seed. (b) Get your horses, harness and implements into good shape. (c) Anything else that can be done before seed time, to facilitate or expedite seeding should be most carefully performed.

(2) Lose not a minute when seed time arrives. Get on to the land at the very first opportunity. Earlier seeding usually means bigger crops.

(3) Perform every operation thoroughly:—Do the ploughing well. Disc and harrow the land until a perfect seed bed is prepared. Sow the seed carefully, with no misses from bad driving, no blanks from plugged drills, seed sown not too deep but deep enough, according to character and condition of soil. After seeding, roll if the soil is not too damp, then lightly harrow.

(4) See that water furrows are run where needed.

(5) Keep weeds in check.

(6) In the case of hoed crops, even more thorough work, extending until August, will ensure success.

(7) Do not economize in labour at seed time. A last stroke of the harrow after the seed bed seems perfect usually means extra bushels.

To Summarize:—

Get ready for seeding now.
Prepare land thoroughly for seed.
Use good seed.
Sow seed early.
Sow seed well.

The result:—Much larger crops of a better product.

Meadows cannot now be increased in area nor can much be done to increase the quantity of hay in 1915. Not a few old meadows in the eastern provinces, however, might be broken up and sown to oats and peas after thorough working. The returns would surely be much better than if left in hay. This is true whether the crop be harvested green as hay or allowed to ripen for grain. In Ontario and Quebec, these old meadows sown to corn for forage would give the best returns of all. A little extra work before seeding is worth a light dressing of manure if such is not available. Hay is likely to be dear; grow other forage crops and be in a position to sell a few tons. Selling hay is bad farm practice but war knows no law.

Forage crops and coarse feed in abundance mean cheap production of flesh and milk. Beef can thus be readily produced, mutton and pork made abundantly available and milk be put on the market at a reasonable price with a fair profit to the producer.

By each and every one of us doing the best that is in him and making the very wisest use of every acre that is under his control, we, as Canadian farmers, may do much to help our country, our empire and the great cause of freedom.

"Ontario's Responsibility in Increasing the Production of Food Stuffs to Meet the Requirements of the Present Situation."

PROFESSOR C. A. ZAVITZ, GUELPH, ONTARIO.

The number of skilled farmers on the lands of the world in comparison with the number of non-producing consumers will be considerably lessened owing to the present war. In consideration of this fact we should remember that there is likely to be more destitute people in the world within the next few years than ever before. Great will be the demand of the agriculture of this province whose field crops are practically equal to those of the three Prairie Provinces combined, and are greater than those of the rest of the Dominion put together. We need strong men in agricultural faith, knowledge and activity in order to do well our part in furnishing in the best possible way the necessities of life for the people of other countries as well as those of our own land.

The Report of the Bureau of Industries for Ontario has recently drawn attention to the fact that in this province "experienced agricultural hands" are scarce.

In an editorial in "The Family Herald and Weekly Star" of Montreal, under date of November 11th, we find it stated that, "If ever a golden opportunity for displaying a useful patriotism offered itself it is surely developing itself before the eyes of the Dominion at present."

Major-General Sir William Otter, in his message to the Canadian people, stated as follows: "Above all, measures should be taken to stimulate the production of food stuffs. One of the greatest services which the Canadian people can render to the Empire at present is to increase our supply of food for the British people. This is at once our duty and our opportunity."

That much is expected of the farmers of Ontario can be seen from the address given by Hon. W. H. Hearst, Premier of Ontario, when he spoke at the Women's Institute Convention held in Toronto a few weeks ago, and from which address he was quoted as saying that "The farmer at work in the field is doing as much in this crisis as the man who goes to the front."

The statements and the references which I have here presented show something of the disadvantage, the responsibility and the opportunity of the farmers of this province. Disadvantage, owing to the fact that skilled labor throughout the country is very scarce; responsibility, owing to the fact that within the next few years there is sure to be a considerable increase in the proportion of humanity who will be in great need of the real necessities of life; and opportunity, owing to the fact that the farmers have it in their power to do a vast amount of exceedingly helpful service for their fellow men, especially of other countries.

I venture to express the opinion that within the next few years greater attention will be devoted to agriculture in Ontario

than ever before. The production of food stuffs of the right kinds and in increased quantities is an urgent necessity of this province at the present time, and will continue to be so for years to come. It is to be hoped that the farmers of Ontario who remain on the land will do their utmost to meet the increasing demands of the present day, and that the number of skilled farmers of the province actually engaged in farming operations, although less than formerly, may be able to considerably increase production from year to year.

In order to get the best results in crop production in Ontario in the coming year many things should be carried out in a practical and a systematic way. Plans for crop production should be made as long before seeding time as possible. Careful attention should be given to the use of those crops which would best meet the present demands in furnishing the most suitable food materials for home consumption and for export, and also the most serviceable feeds for farm stock. If the best varieties are not already secured efforts should be made to procure the varieties which would likely give the best satisfaction. Care should be taken in grading the seed in order to get large, plump, sound seed of strong vitality, and entirely free from impurities of all kinds. This work should be completed before the spring opens. As soon as the land is dry enough and warm enough to work to good advantage in the spring everything should be ready for early and thorough cultivation. All crops should be sown or planted at the proper time. In the sowing of grain for instance, spring wheat should be placed in the ground as early as possible, followed by barley, oats and peas in the order here mentioned, and all should be sown within ten days if possible, after the land is suitable for cultivation. Care should be taken in the best methods of sowing, and the proper quantities per acre, not only of the grain, but also of the corn, roots and all other farm crops. If these and other points were carried out with great care it would be surprising what could be accomplished in the improvement of crop production in Ontario.

PRINCIPAL CUMMING OF NOVA SCOTIA.

When we urge our farmers to cultivate more soil and produce more grain, potatoes, vegetables, etc., we are even more interested in having plans made to feed these products to animals whose flesh is required for food purposes, than in having them ready to be sold in their unfinished form. In fact any other course is bound to lead to a depletion of the fertility of our farm lands, and although we should be ready to sacrifice our lands as well as our lives, it is well that we should not do so until circumstances compel us. In any case the land should be cultivated and more food grown.

The greatest obstacle to the carrying out of the ideal policy for the East, namely, of growing more products from the soil, and feeding these to live stock of all kinds, is that the present abnormally high prices for hay and oats, as well as live stock, are leading farmers to part with both their live stock and their field products to such an extent that the farms are bound to be depleted of fertility, and the numbers of live stock reduced far below a right standard. It seems difficult to prevent this development of affairs, and we can only counsel our best farmers, in their own interests as well as in the interests of the Empire, to hold on to as much live stock this fall, and to feed as much hay, oats, etc., on their own farms as they possibly can.

In regard to the policy of growing more field products, this should be brought about by the plowing up of old pastures and other fields which have not been plowed for many years. While this is necessary, if a maximum product is to be grown, farmers must not lose sight of the fact that, up to a certain extent, it is better policy to cultivate the fields at present under crop more thoroughly, and to sow better seed on them so that they may produce maximum results. It is only after this has been done that the matter of plowing up new fields should receive consideration.

In regard to these new fields, farmers must not lose sight of the fact that a large proportion of these fields in the Maritime

Provinces will give very indifferent results unless they are thoroughly cultivated and have a reasonable amount of manure or fertilizer added to them. Furthermore, in order that the farms may benefit from this extra area of land plowed, it is important that all fields sown to oats or wheat or barley should be seeded down with not less than four or five pounds of clover seed, and preferably double that amount per acre. By this means, fields that would otherwise be depleted of fertility will be built up in humus and nitrogen, and a permanent basis will be laid for the carrying on of a rotation of crops in future years. This purchasing of fertilizer and clover seed means an outlay of money which, however, should be fully returned when the crop is fed or sold. Nevertheless, everything should be done to reduce this outlay, and farmers will do well to take a leaf out of the pages of such co-operative bodies as the United Fruit Companies in Nova Scotia, who through co-operation have purchased their seeds and fertilizer during the past two years at nearly 25 per cent. less than farmers who have bought individually.

DR. F. C. HARRISON,

Principal of Macdonald College, Quebec.

Those who remain at home desire to do something to help those at the front, and the more active such help the more pleasing it is apt to be—to feel and realize that they also serve who stay at home and work, and this sentiment directed along the lines of agriculture is the subject on which your honored Secretary has asked me to address you.

Industry Depends on Agriculture

In time of war industry is largely dependent on the buying power of agriculture; therefore the productive power of agriculture is a national question. In addition war demands provisions, either the raw or manufactured products of our farms—wheat, oats, hay, and meat, cheese, sugar, wool and leather. To what extent can Canada, and our own Province especially, supply these? Quebec grows only a million bushels of wheat, not sufficient for its own people. 39,000,000 bushels of oats are grown, but this amount is not sufficient to give the 370,000 horses in the province of Quebec 10 lbs. of oats a day, and does not take into account the oat feed given to cattle, sheep and hogs. Hay constitutes our chief agricultural wealth and accounts for more than 53 per cent. of the total value of the farm products of the province. The war value of this commodity is not as great as that of the grains, as most armies rely on the country they are campaigning in for rough fodder and the bulky nature of the material makes transport difficult. Nevertheless, its importance is great, in that it serves as food for stock and can thus be turned into meat, butter and cheese.

We cannot compete with the West in wheat and oat growing but we can grow those crops that are advantageous for the feeding of animals and sell the manufactured product of our farms, and thus obtain better prices and at the same time increase the fertility of the land.

It is along these lines that Quebec will find the best outlet for her war commodities, and under the present war conditions we should follow the impetus given by the Government of the province in their magnificent gift of cheese to the British Government, a gift that calls attention to our resources in manufactured agricultural products, and a gift that will serve to aid our most important industry.

Animal Products Increase

Our animal products are increasing; they have doubled in value in the last ten years; their value per acre of improved land was $5.2 in 1901 and $10.1 in 1911, and this progress has been helped by the material assistance to buy improved stock, and by public sales of pure-bred stock. A word of warning should be given—much of the pure-bred stock is purchased at some distance from the province without inspection, and inferior animals are often supplied, hence the importance of carefully controlling the character of the stock and purchasing

only animals true to type and of good individuality. The Department is also to be congratulated on its stand with reference to the purchase of animals free of tuberculosis. The result of insisting that all pure-bred cattle purchased for syndicates be tested has resulted in greater knowledge among the farmers of the benefits of tuberculin testing.

Where Quebec Can Help

It is along these lines that Quebec can do much to help, more crops for more and better live stock, greater use of waste land for pasturing sheep, so that instead of a paltry 600,000 sheep in the province we should have at least ten times that number. All should endeavor to seize the present opportunity and attitude of mind of our people to increase production, so that when the piping times of peace come again we shall be able to hold on to these increases and thus promote the welfare of agriculture, the foundation of our industry and commerce.

PRESIDENT BLACK of Manitoba Agricultural College.

While the great war continues, the farmers of Canada can contribute to the support of the British Empire in no more effective manner than by utilizing—to the fullest extent—the productive forces within their control. It now becomes our duty to fill "the bread basket of the Empire," and send it forward that those who hunger may be fed. It is the hour of opportunity for Canadian agriculture. We owe it to the Mother Country, and we owe it to ourselves, to recognize this responsibility and to grasp this opportunity.

What should be done to meet it? Should the aim be only to grow more wheat, or should every farm be made to produce, to the fullest extent of its capabilities, that for which it is fitted according to its fertility and equipment of buildings and machinery? The longer these questions are considered, the more it appears wise to follow the latter course. A great increase in the wheat crop would be very desirable, and to that end every acre of land fitted for it, should be sown to wheat, but none other. Farmers who have adopted a system of crop rotation would be unwise to change their plans for the purpose of increasing the wheat yield. Indications point to satisfactory prices for farm products of all classes while the war lasts, and the farmer who has adopted a system of mixed or diversified farming will continue to increase productivity and profits; he will more surely guard against the dangers of bad crop-growing weather, and be more ready to profit by changes that may take place in relative values of farm products at the close of the war.

In the history of the present generation there never has been a time when it seemed more desirable that the principles of good management be exercised in farming than now. The soil should be more thoroughly tilled, the seed very carefully selected and sown, and the herds and flocks given the most skilled attention. Every department of the farm will profit by systematic attention. It is a time for the elimination of waste—waste of time and effort. A time, more than ever, for the application of intellectual as well as physical skill.

In Canada, at this Christmas season, all identified with agriculture should be thankful that our lot is cast in a land of plenty, a country not devastated by the sweep of a tyrant's sword, but where it is possible to labor unmolested, looking forward hopefully to the early coming of a brighter day for all humanity; when right shall triumph over might, and it shall be demonstrated for all time that the unselfish shall inherit the earth.

PROFESSOR BARTON of Macdonald College, Quebec.

Canadians, and justly so, pride themselves on having a great live-stock country, and some of the best live stock in the world, but there is not enough of it. Just think, we have only 1/63 of the world's cattle, 1/47 of the horses, 1/28 of the sheep and 1/58 of the swine. United

States with a smaller area, has ⅛ of the world's cattle, about ¼ of the horses, 1/12 of the sheep, and almost ½ of the swine. Even on a *per capita* basis, the United States outdoes Canada in this respect. This great contrast should serve to stimulate our stockmen to greater effort. Everyone recognizes the natural aptitude of this country from east to west for live-stock production; everyone is agreed that our foundation stock is right; and all are sure that we have as good live-stock breeders as any in the world. Then let us have a live-stock boom, a little more activity, a little more demand for good stock and an increase in number as well as in quality.

TO LIVE-STOCK BREEDERS

PROF. GEO. E. DAY, B.S.A.,
ANIMAL HUSBANDRY, O.A.C.

It looks to me as if the live-stock interests of this province have nothing to fear from war times. My advice to men interested in live-stock would be to go steadily forward and not to be tempted to reduce herds by the high prices prevailing for nearly all classes of stock at the present time. I would not advise any man to unduly load himself up with stock of any kind, but it is certainly not a time to curtail operations in stock breeding. I believe that the farmers who hold on to their best stock and keep their breeding operations up to the standard will not lose anything by following such a course. It is seldom safe to plunge, and it is seldom the part of wisdom to let good breeding stock go to the butcher on account of a high price, and thus reduce the stock on the farm for years to come. The man who has his farm wisely stocked has every reason to view the future with complacency.

C. C. JAMES,
AGRICULTURAL COMMISSIONER, OTTAWA.

Great Britain has called on Canada for men and food. She will welcome all the men whom we can send forward, provided they are competent. In the minds of many there is an opinion that from now on we can best serve her purpose by sending forward food and by planning so that an ample food supply shall be assured during the next year or two. Here is an opportunity for serving the Empire and our own country at the same time. Many schemes are suggested looking to agricultural expansion and the helping out of our own people. Some of these are practicable, some impracticable. It is very difficult to apply to agricultural work forces not trained to it. Food produced by inexperienced and incompetent labor is produced at a loss. The only rational plan is to take the agricultural forces of the country and by giving such help and stimulus as may be warranted enable them to extend their work. The farmers of Canada should be brought to realize clearly that for the next two or three years the world will take at a good price all the food that we can produce. This means that the farmers of Canada should first of all understand fully the situation that now exists and the inevitable outcome of the present war as far as food is concerned. Farmers, as well as others, need information as to the situation.

The next point is that it will not be wise for Canada to undertake any schemes that are not strictly economical; that is, we should not spend two dollars to produce one dollar's worth of food. Any plans undertaken should be carefully considered and we should spend our money only along productive lines. Governments, municipalities, corporations should give most careful consideration to any plans suggested for increasing food production. We can best use the farming community to produce an increased supply of food, and any plans for assistance and expansion should be based on sound economic principles. This, of course, should be kept quite distinct from propositions to place out of work people on vacant land to grow food for themselves.

Hope of increased production rests largely with the farmers themselves. They must know the situation and they can be stimulated to greater effort.

I submit that the first and best thing to be done is for the farmers to be called

together in meetings in all parts of Canada to discuss this question, to receive information as to the situation and to be stimulated to increased effort. If they understand clearly the situation they will respond. Co-operation in planning is desirable. In such conferences, possibly, schemes can be evolved that will call for co-operation on the part of Governments, municipalities and corporations.

WHERE EVERYBODY HELPS

By G. C. CREELMAN, L.L.D., B.S.A.,
President Ontario Agricultural College.

Statistics go to prove that the most successful farmers are those who keep their sons and daughters at home and interested in some phase of the work.

One's own folks, of course, take a greater interest in the building up of the farm and the farm home than can be expected of mere hired help. Also a man or woman can plan work and carry it out better where home folk only are engaged in the transaction.

Then why not make a special effort this year to interest everyone in the Old Homestead. It may not be the glamour of the city that steals our young people, but rather the desire to earn wages and some money of their very own—wages or a life partnership might do.

Times are very bad in cities now. Perhaps your boy or girl would come back if you offered a partnership in your business. Perhaps a good farmer in your family has been spoiled by trying to run a street car or shovel snow in some large town. Perhaps your girl is tired, so tired, of trying to make an honest living, working for people who have no personal interest in her welfare. Offer her a partnership. Give her a ten-dollar-a-month-and-board chance to live with those she loves best and then plan a Poultry or Dairy or Bee campaign to get the money back.

I have not much confidence in the cry "Back to the land" when it applies to men and women without rural experience. I have every confidence, however, in farm boys and girls coming home to familiar work.

If you have no boy or girl to bring back, just stop to think of some neighbor's child whose parents are perhaps dead. Write to such a one and I am greatly mistaken if you will not find such a response as you never anticipated.

Young Canadians are proud and independent. They will suffer in silence and pretty nearly starve before asking help—but many a one writes me now that he or she would gladly return to the country if some definite arrangement could be entered into of a business sort, whereby the business could be run as a partnership and where hard work would be rewarded with adequate remuneration.

Oh! if we could keep our young people on the farm and bring back all who would come we should soon solve the problem of increased production

PART III.

BELGIUM

The Country

Belgium is a fairly compact country, 11,373 square miles in extent. It is shaped more like a triangle than a square. From northwest to southeast the distance is 180 miles, from north to south 110 miles. Its boundary lengths are as follows:—sea coast, 42 miles; Holland frontier, 269 miles; Prussian frontier, 60 miles; Grand Duchy of Luxemburg, 80 miles; French frontier, 384 miles. The country is mainly a plain rising gradually from the coast toward the south and southeast where the hills reach an elevation of 2,000 feet. The River Scheldt flows northeast nearly parallel with the coast and about 25 miles therefrom, passing through Ghent and Antwerp, and thence into Holland. Further southeast is the Sambre which joins the Meuse at Namur. Further east on the Meuse is Liege. Ten or twelve miles northeast of Liege the Meuse enters Holland. There are nine provinces. Brabant, in which are situated Brussels and Louvain, is the most populous and lies between the Scheldt and the Meuse.

Population

Before the outbreak of war the population was about 7,500,000, 589 per square mile. Compare this with the following: England and Wales, 558; Holland, 406; Italy, 293; Germany, 311; Austria, 226; Switzerland, 214; France, 191; Denmark, 165; Hungary, 154. The most populous province was Brabant with 1,078 per square mile, followed by East Flanders (Ghent) 931; Hainaut (Mons) 830, and Antwerp 813. Most of the people were living north and northwest of the Meuse. Belgium was the most densely populated country of Europe. The population is about equally divided between those in the north speaking Flemish and the Walloons in the south speaking French. There is a clear line between these two classes except in Brussels where both are found. There are two peoples in one country:—

> "The Flemish peasant literally lives on the land he tills, leaving the village to officials, the curé and industrial workmen; while the Walloon lives in the village and goes to and fro to farm his land."

Transportation

A small portion of the north lies below sea level, reclaimed by dykes. There is a large number of small rivers and streams which have been improved into canals, which for use rank next to those of Holland. In 1907 there were 2,859 miles of steam railway, or over 30 miles for every 100 square miles. Belgium for its size had the most complete railway service of any country in the world. The railways own the canals and the nation owns and operates practically the entire mileage of railways. Rates were low and the people well cared for. It was possible to buy a railway ticket on which one could travel on any railway in Belgium for two weeks (any distance) as follows: 1st class, $12.00; 2nd class, $8.00; 3rd class, $4.70.

For every mile of standard railway Belgium has at least one mile of light railway (39½ inch gauge). In 1908 the total length was 2,586 miles, with half as much more then under consideration. The state, province and commune unite in their construction. They are cheaply constructed and the expenditure is spread over ninety years. Passengers and produce of all kinds are hauled at low rates. Belgian agriculture has profited by good roads, canals, standard railways and light railways.

Occupations

For centuries the Flemish peasants grew flax, and home made linens were a product of the farm. Coal and iron are both found in central Belgium. Factory production of recent years has grown rapidly and Belgium had become a great industrial country. The great mass of the people are engaged in railroading, textile and clothing manufacturing, mining, metal

working, glass and pottery making, furniture manufacture and building, and the preparation of foods. This industrial population is spread through central Belgium. Cheap and convenient transportation facilities enable the artisans to live on the land and thereby assist in food production. Wages are low, but everybody works and the cost of living is comparatively low. While the agricultural population has been increasing in recent years, the industrial population has been increasing more rapidly. It is difficult to draw the line exactly between the agricultural population and the industrial, but it may be stated that the former is from 20 to 25 per cent of the whole. We are not far astray in saying that it is about twenty per cent.

Agriculture

Belgium originally was a country of poor soil. Of its seven and a quarter million acres, about two-thirds or four and three-quarter million acres are cultivated. About ninety per cent of the farmers work from one to ten acres. A large number of the artisans have small garden plots. The few large farms are generally made up of disconnected plots, many of which are leased. The principal agricultural imports are grains, dairy products, live stock and eggs, to which may be added fish and beer. The principal exports are horses, vegetables, fruits, sugar, and prepared foods. According to Rowntree the average net imports over exports of agricultural produce per head of population for the five years 1901-05 was as follows:—Belgium, $11.00; France, $1.00; Germany, $4.50; United Kingdom, $19.50. Denmark's exports of the same over imports were $18.50 per head. When we remember that in Belgium the agricultural population is little if any over twenty per cent of the whole the showing is remarkable. Rowntree, in his work on Land and Labour (Macmillan & Co., 1911), attributes it largely to "her light railway system, her methods of agricultural co-operation, and the means taken to educate her farmers." "The three most striking facts in connection with Belgian agriculture at the present time are, firstly, its intensity; secondly, the marked decline in the cultivation of cereals for human consumption, notably wheat; and thirdly, the great development of cattle breeding."

Henri Masson, Advocate of the Court of Appeal of Brussels, has prepared a statement of the war losses in Belgium during the first 82 days of the war. The whole loss up to that time amounted to no less than $1,059,836,000. Out of this huge sum $283,614,000 was for damage to rural districts—crops, live stock, country homes and buildings.

FRANCE

France has a total length from north to south of 600 miles, and a breadth from east to west of 528 miles. Its area is 302,803 square miles.

France's population in 1906 numbered 39,252,245. The average density of the population is about 190 to the square mile. The increase in the urban population between 1861 and 1891 was about ten per cent. At the latter date, 37 per cent. of the inhabitants lived in centres containing more than 2000 inhabitants.

During the thirty years previous to 1906, the increase in population was not much over two millions. The rate of increase of the French people is the lowest of any European country, the percentage of births over deaths being about 1 per cent. In 1901, the excess of females over males was 1.6 per cent., there being about 508 females to every 492 males, and the disparity has a tendency to become still more marked.

Occupations of the population in 1901.

		per cent.
Agriculture & Forestry	8,176,569	41.5
Fisheries	67,722	0.3
Mines	266,351	1.4
Manufactures	5,819,855	29.5
Transports	830,643	4.2
Commerce	1,822,620	9.2
Liberal professions	399,839	2.0
Domestic service	1,015,037	5.2
Civil service	1,297,569	6.6
Not specified	18,820	0.1
	19,715.075	100.

Communication

The principal French railways have a total length of 24,755 miles. In addition, there are narrow gauge and local lines covering 3,905 miles.

The waterways are 7,543 miles in length, of which canals comprise 3,031 miles. Water traffic, the volume of which is very considerable, consists chiefly of such heavy merchandise as coal, building materials, farm produce and foodstuffs.

The main highways of France are admirable. They radiate from Paris to the great towns of France, covering a distance of 24,000 miles, and are maintained at state expense.

Commerce

Being in the main a self-supporting country, France carries on most of her trade within her own borders. Her largest foreign trade is done with Great Britain, and next come, in the order named, Germany, United States, and Belgium.

Raw materials constitute 63 per cent. of her imports, the most important being wool, cotton, silk, coal, oil-seeds and timber. Of her exports, manufactured articles comprise 56 per cent., being made up chiefly of silk, cotton and woollen goods, fancy ware and apparel. Articles such as wine, spirits, dairy products and other foods constitute 16 per cent.

Mines and Minerals

The principal mines of France are coal and iron, the Flemish coal basin in the north producing 60 per cent. of the coal, and the district of Muerthe-et-Moselle on the German border producing 84 per cent. of the iron. Zinc, lead, iron pyrites, copper and salt are also mined.

Quarries are numerous all over France. The non-metallic products include building and paving stone, slate, plaster, kaolin for the manufacture of porcelain, marble and cement.

Manufactures

The leading industrial districts of France, with a few exceptions, are found in the north and northeast of the country. That is to say, from the region of Paris to the seaboard on the northwest, and to the Belgium and German frontiers on the north and northeast. Military operations during the present war have swept over almost the whole of this territory, with the exception of the valley of the Seine, and fearful havoc has been wrought to French industry and among the industrial population.

Outside of northern France, other manufacturing districts of importance are found in the basins of the Loire and the Rhone, with Nantes and Lyons as their respective centres, and also in Normandy. In the manufacturing districts, 50 per cent. and upwards of the working population is engaged in industrial pursuits.

The Department of Nord on the Belgian Border is a typical industrial region, being the seat of the woollen industry and prominent in other textile industries and in metal working, the fuel being supplied by its own coal fields. Paris and its suburbs has the largest manufacturing population of any district. With the exception of spinning and weaving, every great branch of industry is there represented. The district is the centre for the manufacture of dress, millinery and articles of luxury. Other leading industries of northern France include the manufacture of cotton, flax, hemp, jute, steel and iron, hosiery, leather, sugar, glass, porcelain, chemicals, paper, brewing and malting, and zinc and copper smelting.

In Normandy, the cotton industry is prominent. In the Loire district, steel and iron manufacturing and lead smelting are carried on. In the Rhone valley, the leading manufactures are those of steel and iron, cutlery, weapons, silks and ribbons, lace, oil, soaps, chemicals and hosiery. The silk fabrics of France hold the first place, particularly the more expensive kinds.

Industrial Conditions

The French artisan is trained in his special technique, and takes pride in his work. He is endowed with artistic taste, and in large part is free to work out his ideas. Though wages are low, he rarely emigrates, but steadily improves at home in comfort, in wealth and in higher standards of living. He is protected by

employee insurance, compensation for injury, old age pensions and to a large extent against unemployment. He also enjoys the benefit of low rents, co-operation, and market facilities vastly superior to our own.

France has made remarkable advances along industrial lines. Its schools of research have improved methods and enlarged the scope of industry. Through the medium of technical schools, artisans and workmen, foremen and managers, manufacturers and dealers are kept familiar with foreign methods and inventions, subjected to cultured influences and stimulated in various ways towards higher accomplishment. Small individual workshops, fast disappearing on this continent, show a slow though steady increase in France.

Agriculture

France is pre-eminently an agricultural country. It has an agricultural population of 18 million souls, of whom 6,800,000 are agricultural laborers. Probably 22 per cent. of the population is directly engaged in agriculture.

Of the total area, 94 per cent. or 195,000 square miles is classed as productive. Of this, 94.80 per cent. was in 1909 under the plough, 1.94 per cent. in meadow, 2.9 per cent. in herbage and pasture, 0.68 per cent. in vineyard, and 0.49 per cent. in miscellaneous crops, in all 171,000 square miles.

The value per acre of farm lands ranges from $80 to $240, the average being $145.

Small land holdings form the majority. Holdings ranging in size from less than 2½ acres up to 90 acres constitute 97.29 per cent. of the total; holdings from 90 acres upwards form only 2.71 of the total. About 80 per cent. of the holdings are farmed by the owners.

In the majority of cases, the farmers live in villages, as in Germany, and not upon the land. Still, a great number in all sections of the country live upon their land, the number that do so being far greater than in Germany. The fields constituting the holdings are often scattered, and lie at a good distance from the home of the owner. Usually, the fields are fenced either with hedges, stone, wood or wire.

The French farmers are extremely economical, and while on the whole they are prosperous, they owe their prosperity largely to simplicity of living and saving habits.

French farming is intensive, the land is well worked, and is manured and fertilized liberally. Not as much commercial fertilizer is used as in Germany. On the large farms all the best and necessary implements are employed, but the small farmers, generally speaking, are backward in this regard. The more expensive machinery is now being generally introduced through the medium of co-operative societies. As a rule the farmers are slow to adopt mechanical power, many believing that hand labor is superior to that of machinery. The amount of hand labor performed is very great, but the percentage of female labor is not so high as in Germany.

The exodus from the country to the city is serious in France as in nearly all other countries.

In south and central France where small farms prevail, the animal labor is performed mostly by cows and oxen. In northern France, where the land is good and the farms rather large, horses and oxen are employed.

While wheat and wine constitute the staples of the country, French agriculture is distinguished for the variety of its products.

Cereals occupy one-third of the cultivated area, and the quantity of grain raised is nearly sufficient for domestic consumption. The average yield of all the leading crops is far greater in Germany than in France.

Cereal Production

	Average 1896-1905 thousands of bushels	Aver. yield
Wheat	317,707	19.1
Meslin (wheat and rye)	8,826	17.0
Rye	56,612	16.4
Barley	41,066	21.0
Oats	253,799	26.4
Buckwheat	23,136	16.6
Maize	24,456	18.4

The cultivation of the sugar beet and the manufacture of sugar is prominent in northern France. Particularly in the Departments is the Aisne, Nord, Pas-de-Calais, Somme and Oise. Flax and hemp are also grown in the north, but show a decreasing acreage. Hops are also produced.

Industrial Plant Production

Averages 1896-1905.

Sugar Beets	6,868,000 tons
Hemp	18,451 "
Flax	17,857 "
Tobacco	22,453 "

Dairying and the fattening of cattle is general in the northwest, west, west-central and eastern France where meadows are predominant. The poorer grazing lands of the upper levels of the Alps, Pyrenees and elsewhere, are given over for the most part to sheep raising.

	Number
Cattle (1905)	6,799,988
Sheep	17,783,209
Pigs	7,588,779
Horses	3,169,244

All classes of live-stock except sheep show an increase in numbers over a term of years.

France produces all fruit consumed, except bananas and pine apples, and fruit growing is general in all districts. Cider production in northwest France averaged 304,884,000 gallons during the period 1896-1905. The valley of the Loire abounds in orchards. Apricots and walnuts are grown in central France, chestnuts in the hilly regions, figs, almonds and olives in the south, and oranges and citrons along the Mediterranean coast. Silkworm rearing is an industry of the south that produces about .16 million pounds of silk.

The vine grows generally except in the extreme north.

Acreage of producing vines, 1896-1905	4,056,725
Wine production, gallons	1,072,622,000

Market gardening is an important industry in the regions around Paris and other leading cities, and is very general in Southern France.

Agricultural Education

The provision made for agricultural education is good, and the government does much towards educating and helping the farmer. Increase the productive power of humanity, and you ameliorate man's lot, has long been a maxim. Not only does the government establish and maintain agricultural schools, but young men are helped financially to attend them.

There are 40 practical schools of agriculture, 10 farm schools, 200 teachers having charge of agricultural instruction in the primary and secondary schools, 85 stations for investigation and experiment, besides other institutions for specialized instruction.

Co-operative organization is widespread, and the loaning of money to farmers at reasonable rates is provided for.

RUSSIA

The Russian Empire, with a total area of 8,660,000 square miles in Eastern Europe and Northern Asia, comprises one-sixth of the land area of the globe. It is larger than all North America, and twice as big as Europe. The British Empire may be more extensive, but its possessions are widely scattered, whereas Russia's area is compact.

Population

The Russian people number 172,000,000 about one-twelfth of the inhabitants of the earth. During the 40 years from 1872 to 1912, European Russia, in spite of emigration, doubled her population. On account of its great extent, the country is still thinly peopled. Even should its present rate of increase continue into the middle of the present century and reach the 267,000,000 mark, there would still be ample room for them and for millions more in its vast territory.

Configuration

The configuration of the territory occupied by European Russia is that of a broad elevated plain, ranging between

500 and 900 feet above sea level, deeply cut into by river valleys, and bounded on all sides by low swelling mountain ranges. On this enormous plain, two thousand miles long by about one thousand miles wide, there are no hills of more than a few hundred feet high. Its rivers are sluggish, tortuous and uncertain in the direction of their flow. The Volga, with a length of 2,400 miles, has an average drop to the mile of only four inches. Of the aggregate surface of European Russia (apart from Poland and Finland), 19 per cent. is occupied by lakes, marshes, and sand, 39 per cent. by forests, 16 per cent. by prairies, and 26 per cent. is under cultivation.

Climate

The Russian Empire is almost entirely confined to the cold and temperate zones. Everywhere in European Russia the winter is cold and the summer hot. The seasons vary in duration but differ relatively little in the extremes of temperature. Everywhere the rainfall is small, and does not reach its maximum in winter, as in Western Europe, but in the summer season.

With all its geographic greatness, Russia is about as poor in natural outlets to the world as the smallest of the countries of the earth. Not one free outlet to the open sea does European Russia possess if the ice bound shores of the Arctic Ocean be excepted. Odessa on the shores of the Black Sea, near the great rivers, Dnieper and Dniester, is one of the great grain handling ports of the world. Not a ton of its business can reach the high seas without passing through the Bosphorus and the Dardanelles, controlled by Turkey. Similarly Petrograd and Riga find their way to the high seas only through the narrow straits that divide Germany and Denmark from Norway and Sweden.

Historical

Russia is a mere youth among the nations; a stripling whose full stature and breadth are still subject to conjecture and speculation. For centuries her people were constantly enslaved and despoiled by stronger neighbors. Only a race of extraordinary vitality and tenacity could have suffered as they did and survived. Russia was in a state of anarchy and crumbling to pieces before the attacks of Swede, Turk and Pole up to the time the Pilgrim Fathers landed on this continent. The Romanov dynasty brought stability, and Russia's immense growth and enormous development followed. Compared with Great Britain, however, with perhaps a thousand years of unhindered growth behind her, Russia is a young country.

People

The Russian people are of origin too diverse to be here discussed. There are as many different races under the Russian flag as there are under the British. More than half the thirteen million Jews of the world live for the most part in Russian Poland. From this source come most of the Russian immigrants into Canada and the United States.

More than 88 millions of Russians are peasants. Half of them were formerly serfs. The release of 50 million serfs in 1861 was followed by the purchase by the government of 350 million acres of land from the land owners. This land was turned over to the villages to be held as communal property and paid for in instalments running fifty years. The villages were endowed with self-government, and each is a miniature democracy within an autocratic monarchy. The heads of villages apportion the land to be cultivated, and buy agricultural implements.

Religion

The Russian State religion is that of the Orthodox Greek Church. Russia's hatred of the Mohammedan dates from the destruction of the Byzantine Empire by the Turk. The hatred of the Turk persists to this day. After the destruction of Constantinople, Moscow became the head of that branch of the Christian religion.

The Russians are an exceedingly devout people. No one who has visited Russia can forget her imposing cathedrals, her wonderful church music and her number-

less shrines. The icon is the symbol of the saints and of God. In every Russian home, in every hotel room, in every railway waiting-room there is an icon, a reminder to the Russian that "God is in the midst."

Education

There is in Russia a deplorable rarity of good schools, and it is difficult for the poor man to get his son educated. Russia has the largest proportion of illiterates of any civilized country. In the early nineties only fifty out of every thousand were literates. In 1908, 211 out of every thousand could read and write.

General education is now compulsory, but progress is not as rapid as had been hoped.

Temperance

(An important article on this subject will be found in "The Outlook", New York, 16 December, 1914—"Prohibition in Russia," by George Kennan.)

Vodka drinking has heretofore been the curse of the Russian masses. The sale of intoxicants, a government monopoly, was prohibited at the opening of the present war, and the prohibition is likely to remain in effect. The acclaim with which the people received the order was one of the surprises of Russian history.

But with all the ignorance and poverty of the masses in Russia in the past, the leaven of national intelligence has begun to work. The spread of the railway, the telephone and other forces will spell the doom of illiteracy and ignorance, and enable Russia to realize her unlimited possibilities.

Agriculture

Agriculture is the chief occupation of seven-eighths of European Russia's vast population. Few nations have such a great percentage of their people living on the soil and by the soil as Russia. The percentage of urban dwellers of the leading nations is—

England and Wales	78%
United States	47%
Germany	43%
France	42%
Russia	15%

In 1913, Russia produced nearly a fourth of the world's wheat, fully a fourth of its oats, a third of its barley, and more than half of its rye. About two-thirds of its area are sown every year with cereals in the following proportions: rye 34 per cent., wheat 26 per cent., oats 20 per cent., barley 10½ per cent. Of sugar beets, 6 to 8 million tons are grown; of tobacco, 100,000 tons, and in central and northwest Russia, flax and hemp occupy considerable acreages.

To the north is a region of vast forests, extending over an area of more than 500,000 square miles. Hunting, fishing, and the exploitation of the forest provide the principal occupation of the inhabitants. Farther south, agriculture becomes the prominent industry, and forest industries are secondary. The principal crops are rye, oats, barley and wheat.

To the south and west of this lies the great black earth region, of exceeding natural fertility. Here agriculture is carried on more intelligently than is commonly the case elsewhere. Wheat, flax and potatoes are cultivated, hardy fruits thrive, and livestock breeding prospers. Farther east and north, conditions as to soil and climate are less favorable. Wheat is the principal crop, but rye, buckwheat and oats are also cultivated. In the region of the Southern Steppes, wheat, maize, barley and flax are the usual crops. Vast numbers of sheep and horses give these industries equal prominence.

In spite of the efforts that have been made for improving the condition of agriculture, modern methods show little if any advance, and agriculture stands at a low level. Modern dairy-farming is only just beginning, but butter is being exported in increasing quantities to Western Europe, including Great Britain. On the other hand, live stock is diminishing in numbers all round. Although the average exportation of cereals has increased from 1½ million tons in 1860 to over 6 million tons in 1900, the result has been obtained largely through cropping the soil to exhaustion.

Taken as a whole the condition of the peasant is far from satisfactory. Three-quarters of them receive land allot-

ments that are insufficient for the support of their families, and are obliged to rent additional land at fabulous prices. Moreover, they suffer from unscientific methods, lack of education, lack of capital, and in many regions the dryness and severity of the climate is an additional drawback. Consequently there are areas where they grow only sufficient rye to provide bread for 200 days in the year. In many parts the peasantry live on the verge of starvation as a consequence. Arrears in taxation, owed by the peasantry, have increased from $14,000,000 in 1882 to $76,000,000 in 1900. It is not to be wondered at that 4,000,000 peasants settled in Siberia during the period 1893-1905.

Market gardening and fruit growing are profitable occupations in certain parts of southern and central Russia, and have led recently to the establishment of jam, pickle and canning factories. Poultry farming is becoming more extensively engaged in, and vast numbers of eggs are exported.

Trade and Manufactures

The wealth of Russia consists mainly of raw produce. The trade of the country turns chiefly on the purchase of this for export, and on the sale of manufactured and imported goods in exchange. The traffic is in the hands of middlemen, to whom the peasants are for the most part in debt, as they purchase in advance and pay in produce. A great deal of the internal trade is carried on by travelling merchants. Fairs are very numerous, and have considerable importance both for trade and for home manufactures. Nothing is bought by the peasant that he can fashion for himself, for rubles are few and far between with him. What little he buys is usually obtained in trade.

Measured by population standards, Russia's foreign trade is exceedingly small. The imports of the port of New York alone are one and a half times as great as those of Russia. New York's exports are of a hundred million dollars greater value than Russia's contribution to international trade.

Of the total exports, Germany takes 23.3 per cent., and the United Kingdom 22.9 per cent. The bulk of the commodities taken by the latter are wheat, wool, barley, eggs, oats and flax.

Russia imports raw material and machinery. Germany supplies 34 per cent. of the aggregate, the United Kingdom 15½ per cent., and the United States 9½ per cent. Machinery, coal, iron, woollens, ships, lead and copper are the commodities supplied by the United Kingdom.

Manufacturing industry in the modern sense can hardly be said to have existed in Russia before the 19th century. Previous to that it consisted of domestic handicrafts. Of recent years these have been developed in central Russia on a factory scale. Owing to many handicaps, however, this central Russian industry, even when supported by very high protective duties, is only able to produce for the home market, and for adjacent territories in Asia.

In Poland, the development during the last twenty years under modern methods has been very rapid. There the chief products are cottons, woollens, silks, cloth, chemicals, machinery, ironware, beer and flour. At Lodz, cotton is the staple product. The workmen are for the most part Germans and Jews. Similar industries exist in central Russia at Petrograd, Riga, Narva, and Odessa. There are modern tanneries and shoe and glove factories at Warsaw, Petrograd and Moscow. In cotton-spinning, Russia ranks third among the countries of Europe. Other industries to show great development are sugar, flour, furniture and paper. In South Russia a vigorous metallic industry has grown up since 1860 in conjunction with iron and coal mining.

The principal branches of industry and the numbers of workers engaged in them were as follows in 1902:—

Textiles	708,186
Food Products	303,213
Wood	79,664
Paper	78,395
Chemical products	60,108
Ceramics	150,809
Mining and metals	549,000
Metal goods	252,215
Various	78,183
	2,259,773

Wages in Russia are very low. In Petrograd a common laborer receives fifty cents a day; a carpenter seventy cents. In the Moscow factories the men receive from five to eight dollars per month; women from three to six dollars. A day's labor is from 10 to 11½ hours.

Other Resources

Russia is immensely rich in undeveloped mineral resources. The empire is bountifully supplied with all the useful minerals. Vast deposits of iron and coal await development. As an oil producer, she is second only to the United States. The Ural Mountains are a treasury of mineral wealth, containing platinum, iron in almost limitless supply, and a profusion of precious stones. Also porphyry, jasper, malachite and other decorative materials. Of gold there are extensive deposits in Siberia.

Reaching across Russia is a great forest belt comprising 900 million acres, one of the finest timbered areas still intact to be found anywhere. No forest that is essential to the water supply may be cut, nor are cattle allowed to graze on reforested areas until the trees have reached a certain size or age. All forest areas considered protective against erosion or the shifting of sands are exempt from taxation.

THE GERMAN EMPIRE

The German Empire as at present constituted was born in 1871, out of the Franco-Prussian war. Its area including rivers and lakes is 208,830 square miles. In respect to area, it occupies third place among European countries, coming next to Russia and Austria-Hungary.

Germany's arable land constitutes about 65 per cent., and forest land about 20 per cent. of the area. Only 9 per cent. of the land is classed as unproductive.

Germany's population in 1871 was 41,000,000. It is now over 65,000,000, standing next to Russia among European countires. Only Belgium, Holland, Japan and the United Kingdom among the nations have a denser population; only China, India, Russia and the United States have a more numerous population.

Excess of Births over Deaths in leading European Countries per 1000 inhabitants:

1912.

Russia	17.0
Italy	14.2
Germany	12.7
Austria-Hungary	11.7
England and Wales	10.5
Belgium	7.8
France	1.0

Germany's people increase at a rate exceeded only by the people of Russia and Italy. The number of its young men annually attaining the age for military training exceeds half a million. (In Russia 1,200,000 young men every year attain the age of 18 years.) Emigration is practically at a standstill, and has been so for some years.

Wealth per capita, 1912:

Germany	$1,168.00
United States	1,309.00
England	1,214.00 to $1,380.00
France	1,500.00

Average Income per capita, 1908:

Germany	$132.09
England	193.97

The annual savings of Germany are estimated at $38.93 per capita.

Number and proportion of persons engaged in various occupations in Germany, 1907:

Industry	Number of persons	Per cent.
Agriculture	9,732,472	30.90
Forestry, hunting and fishing	140,785	0.48
Manufacturing and Mining	11,256,254	35.73
Commerce and Trade	3,477,626	11.04
Domestic Service	1,736,450	5.51
Professional occupations	1,738,530	5.52
Other employments	3,404,983	10.82
	31,497,100	100.00

The above figures make evident the fact that Germany is essentially a manufacturing nation dependent largely upon her export market. At the time of the Franco-Prussian war, she was agricultural, and more than 75 per cent. of her people were engaged in agriculture. In 1913, less than 31 per cent. were so engaged, a decrease of over 50 per cent. Normally

probably 37 per cent. of her total working force is engaged in manufacturing. Probably 45 millions of her people may be classed as urban and 20 millions as living outside of the cities and towns.

Even Germany's agriculture cannot keep pace with domestic consumption, and the Empire finds herself more than ever under the necessity of trading manufactures to the world for food.

Trade and Commerce

Germany stands second to Great Britain as a buyer in the world's markets, and third to the United States and Great Britain as a seller. To put it in another way, Germany in 1913 imported nearly one-eighth of all the world had to sell, and exported more than one-ninth of all the world wanted to buy. Her yearly output of manufactured goods may be estimated at some figure between twelve and fifteen billion dollars, and of this, about two billion is sold on foreign markets many of which are now closed to her.

No other nation has made such a successful bid in the past 25 years for foreign trade. In that period her foreign trade increased 300 per cent. as against 275 per cent. increase by the United States, and 100 per cent. increase by Great Britain. Her agents went into the markets of the world and studied the wants of the people. Germany was willing to make things to order for the world. She did not ask the world to buy the left-overs of her domestic trade, nor did she endeavor to force German styles on foreign customers.

Germany's success as an export nation has been due mainly to three things—making what the world wanted, giving her foreign buyers the credit they demanded, and packing goods so as to meet shipping conditions without damage.

A consideration of the facts makes it apparent that the German Empire embraces the second most numerous people and the third most rapidly increasing people in Europe; that they inhabit a territory considerably less in extent than the State of Texas, being exceeded in density of population only by Belgium, Netherlands and the United Kingdom so far as Europe is concerned; and that in agricultural production Germany has reached the limit or practically the limit of her capacity, and already imports large supplies of food products. The expansion of her trade lies therefore in the direction of manufactured products. For these, increasing supplies of raw material must be imported, and a market for the finished product found outside of her own boundary.

Commercial Intercourse between Germany and the chief countries in 1907.

	Percentage of German	
Allied Nations:	Imports	Exports
Belgium	3.4	5.0
France	5.2	6.6
United Kingdom	11.2	15.5
Russia	12.7	6.4
Canada	0.1	0.4
British South Africa	0.5	0.4
New Zealand	....	0.1
British West Africa	0.8	....
British India	4.7	1.4
Australia	2.6	0.9
Japan	....	1.5
Other leading countries:		
Austria-Hungary	9.3	10.5
Italy	3.3	4.4
Argentine	5.1	2.6
Brazil	2.2	1.5
United States	15.1	9.5

Manufactures

In no other country of the world has manufacturing industry made such rapid strides within recent years as in Germany. The development embraces all classes of manufactured articles, but the iron and steel industries may be said to be the chief feature. The output of the huge blast furnaces is constantly increasing.

The advance in the manufacture of steel is most notable. The greater part of the steel is produced at or around Essen. Many states have been supplied with steel guns and battleship plates from Krupp's famous works. The export of rails and bridge steel has steadily increased. In the manufacture of machines and engines, Germany stands second to Great Britain. Hardware, locomotives

and agricultural machinery are exported. Some of the largest vessels in the world have been built in the German shipyards.

Cotton manufacturing is pursued chiefly in Alsace. In wool, flax and hemp manufactures, upwards of a million persons are employed, half of them being women. In the manufacture of linen, Germany has been left far behind by Great Britain, France and Austria-Hungary.

The manufacture of paper—including printing, writing and wall paper—is carried on in over one thousand mills (1895) scattered over the Empire. Other leading articles of manufacture are leather goods, silk, lace, glass, porcelain, chemicals, toys and beer.

In 1913 Germany produced 2,720,000 tons of refined sugar from beets.

Education

Education in Germany is compulsory between the ages of six and fourteen. There is on an average one primary school for every 900 inhabitants. The percentage of army recruits unable to read or write was only 0.45 per thousand in 1901. In 1876 it was 23.7.

The Germans were the first people to undertake the systematic education of the hand as well as the mind of the child. Every German is educated for the particular work in life that has been chosen for him. There is no drifting into a trade or profession. Each child has his career selected for him, and when his training is finished, he is fitted for no other. Specialization is the governing principle.

No other nation possesses so many fine technical schools. Each of the larger provinces, except Posen, has at least one university. Some of these date from the 13th century. The total number of universities is 21, and the total enrollment 55,000.

Religion

There is no State religion in Germany. Almost two-thirds of the population belong to the Evangelical Protestant Church, and rather more than a third to the Church of Rome.

Shipping

Germany's Merchant Marine in 1911 consisted of 4,850 ships, with a cargo carrying capacity of 3,153,000 net tons register.

Ports

The ports of Germany affording oversea communication with distant lands are mainly those of Hamburg (Cuxhaven) and Bremen (Bremerhaven), both of which are situated on the North Sea. These ports carry on a vast trade with all the chief countries of the world, and are the main gateways of maritime intercourse between Great Britain and Germany. Hamburg, at the mouth of the Elbe, is the most important harbor in continental Europe. The Baltic ports provide communication principally with the adjacent countries, Russia and Sweden.

Germany did not limit her commercial activities to countries that could be reached by a merchant marine. By financing the building of railways into Asia and to the very borders of India, she has sought to make possible a shorter trade route to the heart of the East than the sea route to India or the Russian Trans-Siberian railway affords.

Railways

The German railways are nearly all state owned. The total mileage in operation in 1911 was 38,400. The German view of rebates and discrimination in railway rates is that the small shipper should pay a higher freight rate than the big shipper, and the domestic shipper pay a higher rate than the export shipper.

Roads

The total length of public roads in Germany is estimated at 80,000 miles. The roads are well built and well maintained. They are narrower than the roads of this country, and as a rule are lined on both sides either by fruit or ornamental trees.

Canals

Few countries compare with Germany in the number of canals and canalized rivers. Its rivers are joined together by canals as our railways are joined together by connecting links, and it is possible to travel thousands of miles by water instead of by rail. The Rhine, which is practically the most important river in Europe commercially, is connected by canals with the Danube, the Meuse and other important rivers.

The Kaiser Wilhelm ship canal, 61 miles long, connects the North Sea with the Baltic. The depth of this canal has been increased very recently to 36 feet.

The canals of Germany, including ship canals through lakes, have a total length of about 2,600 miles. Navigable and canalized rivers, to which belong the great water systems of the Rhine, Elbe and Oder, have a total length of about 6,000 miles.

Mines and Minerals

Germany abounds in minerals, and her mines play an important part in the development and prosperity of her empire. Her iron and coal resources are practically inexhaustible. The output of iron ore has enormously increased of recent years. The mineral production of 1912 was valued at $564,000,000. Production and consumption were as follows:

	Production, 1912. Tons	Consumption, 1912. Tons
Coal and lignite	260,000,000	238,000,000
Iron ore (1911)	29,879,000	45,068,000
Copper	23,000	225,800
Zinc (spelter)	311,914	225,000 (estimated)
Lead	199,627	270,000
Tin	12,426	.....

The consumption of iron and copper greatly exceeds production. While Germany purchases large quantities of these metals in the raw state, she also exports a great variety of steel and iron products and of copper wire, the latter product representing the highest value of any single article or class of articles exported.

Germany produces oil in far too small a quantity for her own needs. The production of the few wells flowing has averaged less than a million barrels of recent years, and only a small percentage can be turned into gasoline. Her imports of gasoline from America were 6,000,000 barrels in 1913, and 2,000,000 in 1912.

Germany uses more commercial fertilizer than any other country and 90 per cent. is produced at home. Almost the entire world's production of potash salts has its origin in Germany. The quantity in 1912 is given as over 11 million metric tons. Phosphoric acid is obtained as a by-product of smelting, the slag being made into what is called phosphate flour. Nitrogen is obtained from coke ovens and from the gasification of peat and lignite.

Forests

The German forests are managed on a thoroughly scientific basis. The lumbering and wood-cutting industries are so managed that the supply of available standing timber is not decreasing.

Agriculture

Germany is the second greatest producer of agricultural products of the European nations, yielding first place only to Russia. With one-fifteenth of the area of Europe, Germany in 1912 produced one-seventh of its wheat, a fifth of its oats, more than a seventh of its barley and over a third of its potatoes.

While the farmer in this country uses many acres and gets a small yield, the German farmer uses very few acres and compels the ground to give him a large yield. Of the German farms, 2,733,000 have less than 2.47 acres, 2,306,000 have less than 25 acres, while about 700,000 are larger than 25 acres. Of the total acreage, 47 per cent. is farmed in holdings of less than 50 acres. The majority of these small farms are situated in southern Germany, while the larger farms are mostly in the Prussian provinces. More than 85 per cent. of the land is farmed by owners, and only about 12 per cent. by tenants.

Germany may truly be called a garden. The science of plant nutrition has been mastered, and its farms have a greater producing capacity per acre of almost

every staple crop than any other country enjoys. The use of commercial fertilizers is universal, and scientific farming has made the soil most highly productive. The country's methods of handling crops reflects the progressive character of the German people.

For the most part, the farmers live in villages and not upon the land. The land of each farmer is often a long distance from the village where he lives, and is frequently scattered at different places, involving much waste of time in its operation. Fences are almost unknown, the boundaries being indicated by stone posts buried in the ground.

The land is worked exceptionally well. The winters are not as a rule at all severe. The soil either freezes late or not at all, and thaws early, giving opportunity for extra work. The custom is to plough once shallow and once deep, and to roll, disc and harrow several times. Nearly all farmers keep live-stock, and in addition to using commercial fertilizers, treat their land with a heavy dressing of farmyard manure as often as possible.

On the small farms, the employment of agricultural machinery is very limited. Sometimes the more expensive machines, such as threshers, harvesters, etc., are owned co-operatively. The hand labor is performed mostly by the family and by hired women. In the busy season large numbers of female laborers come into Germany from Poland. In summer time male farm hands get from 75 cents to one dollar per day, and women somewhat less.

The animal labor on the small farms is done mostly by cows, or a combination of a cow and a horse, a mule, or an ass. On the larger farms, horses and oxen are employed.

Yield and annual consumption of the various field crops:

	Average yield per acre. bushels	Average yield 1908–1912, tons	Annual Home consumption, 1908–1912. tons
Rye	25.85	11,012,171	9,180,000
Wheat	30.01	3,962,390	5,685,000
Barley	35.37	3,220,066	5,836,000
Oats	44.08	8,189,062	7,708,000
Potatoes	5.22 tons	44,220,213	36,990,000
Beets (sugar)	....	2,590,000	1,242,000

The most important crops are rye, oats, wheat, barley, sugar beets and potatoes. In the south and west, wheat predominates; in the north and east, rye, oats and barley.

Potato culture and the utilization of the crop have attained a high development. The acreage is more than double that of the United States, and the crop harvested is more than four times as great. Of the crop, 28 per cent. is used for human food, 40 per cent. is fed to farm animals, 6 per cent. is made into industrial alcohol, 12 per cent. is set aside for seed, 4 per cent. is made into starch and allied products, and 10 per cent. decays. The United States has imported potatoes from Germany in large quantities in years of domestic scarcity. It is claimed that 200 factories have been established in Germany for the manufacture of potato flour.

Flax, hemp and tobacco are very important crops. Certain districts are noted for vegetable and garden seeds. The vineyards of the country produce grapes in abundance, and hops are grown in quantities sufficient to permit of their export. The culture of the vine is confined to southern and western Germany, and is specially prominent in the Rhine valley. Fruit growing is prominent in the Rhine valley, Wurtemburg and the Elbe valley below Dresden.

Live Stock	Number on hand 1912	Number Slaughtered for food 1912
Horses	4,516,279	.....
Mules and Asses	12,862	.....
Cattle	20,158,732	8,154,200
Sheep	5,787,848	2,773,200
Hogs	21,885,073	23,977,200
Goats	3,383,971	1,190,400
Poultry	82,474,317	.....
Hives of Bees	2,619,891	.....

Agricultural Education

Germany is strong in agricultural education, and has a large number and variety of schools offering instruction in

various grades of agriculture. Among them are:

Agricultural Institutes in universities	8
Agricultural Secondary Schools.....	26
Farm Schools.....	45
Lower Schools for special subjects...	43
Winter Schools.....	279
Schools for pasture.....	8
Dairy Schools.....	17
Special courses.....	213

The Farm Schools give instruction to farmers' sons on the fundamental elements of agriculture. Schools of this class are being replaced largely by the Winter Schools, which have two winter terms of six months duration. A great number of the present farmers studied in these schools when they were boys. The Winter Schools are popular, serviceable and rapidly multiplying.

Germany's War Resources

If we think of a nation carrying on war as an enormously complicated machine that is working at the highest pressure, we are led to ask, "What part will first give way?"

The idea is very widespread that, if the war is prolonged, the financial exhaustion of the German Empire will be a factor of great importance in determining the issue. In cases where it is vital to import food and raw material, financial exhaustion means inability to purchase. In undeveloped peasant communities, also, like those of the Balkan peninsula, who cannot manufacture their own armaments, financial resources must be a leading factor in determining the duration of an armed contest. Such countries must buy on credit, and when their credit is exhausted, their military activities must cease. In cases of this kind, the country depends on other countries for the necessities of life or the necessities of warfare. Germany, however, does not come under either of these classifications. So long as her troops guard her frontiers, it is not likely that she will find serious difficulty in raising internal loans, which she will spend internally.

So long, too, as she can continue to produce what is necessary for the life of the people and for the conduct of the war, the crippling of her foreign trade is not a vital issue.

Although, if the war continues, Germany is almost certain to face a serious shortage in many food products, facts and figures indicate that so long as the allied forces are kept outside the Empire the nation will not be starved into surrender.

Germany normally imports cereals for about one-sixth of her people. On the other hand, she normally exports great quantities of potatoes. It is no doubt a fact that potato flour is being used to supplement cereal flour, and that rye flour is being mixed with wheat flour. The stores gathered in during the months of preparation, and the large supply of sugar ordinarily exported, will be available.

The *per capita* consumption of meat is said to have exceeded the amount available by about eight pounds per head. In the past, Germany has imported from Russia vast quantities of geese—6,142,497 in 1911 and 7,433,488 in 1912.

These supplies will be entirely cut off, as will probably be also the importation of eggs, which, in 1913, approximated 166,000 tons. But eggs and fresh meat have been exported in the past in large quantities.

It is to be remembered also that Germany can still import in limited quantities by way of Denmark, Sweden, Holland and Italy, paying for her imports in manufactured articles.

It is likely therefore that the shortage in respect to food will be met.

As Germany depends largely on foreign wool and entirely on foreign cotton, it is possible that clothing may rise seriously in price; but here again supplies are likely to last for a considerable time.

The raw materials that go to supply Krupp's mighty arsenal may be assumed to be sufficient. Essen is indeed the heart of the whole German military machine, and may well be, rather than Berlin, the final object of the allied armies.

What of the material of transport? Germany's supply of horses is inadequate to meet the tremendous wastage. The importance of horses cannot well be overestimated, and a shortage is likely to

prove very serious. The difficulty of importing any considerable number is at least formidable. The source of supply of gasoline in Galicia is imperilled, although perhaps substitutes may be found. If bicycles and motor cars are used as substitutes for cavalry, there is a possible difficulty in a shortage of rubber.

It is a terrible thought, but it may well turn out to be true, that the form exhaustion will take will be exhaustion in the supply of men.

AUSTRIA-HUNGARY.

The Austro-Hungarian Monarchy, often referred to unofficially as the Dual Monarchy, consists of two separate and independent states. Each has its own parliament and its own government. with a head common to both, bearing the title of Emperor of Austria and Apostolic King of Hungary. Certain affairs affecting both halves of the Monarchy are administered in common. These comprise, foreign affairs; the army and navy and finance, in so far as it concerns joint expenditure.

The Monarchy is bounded on the east by Russia; on the south by Roumania, Servia and Montenegro; on the west by the Adriatic Sea, Italy, Switzerland and the German Empire, and on the north by the German Empire and Russia.

Its area, not including the principalities of Bosnia and Herzegovina, is 239,977 square miles, being one-sixteenth of the whole of Europe.

Bosnia and Herzegovina, which were annexed in 1908, have an area of 19,602 sq. miles. and a population of 1,591,000.

	Austria	Hungary
Population, 1901	26,107,304	19,254,559
Density per mile	226	153.7
Area (sq. miles) .	115,533	125,402

There is a large oversea emigration which goes mostly to the United States. In 1906, 169,202 people left Hungary, partly on account of the poverty of the masses, and partly on account of resentment of subject races at the domination of the Magyars.

In Austria, the three principal races of Europe are all represented—Teutonic, Slavonic and the Latin. The Slavonic race is numerically the principal, but it is divided into a number of peoples, separated from each other, and differing in language, religion, traditions and customs, and the race does not possess a national unity. The Germans constitute the most numerous nationality, and play the principal role in the political life of the country.

Hungary also is inhabited by a complex population. The Magyars, who occupy almost exclusively the fertile central plain, are the most numerous and the dominant race. Around them other races are located in groups.

Commercial

The bulk of the Austro-Hungarian foreign trade is with the German Empire, the proportion being 40 per cent. of the imports and 60 per cent. of the exports. Next in importance comes Great Britain, and then India, Italy, the United States, Russia, France, Switzerland and South America, in about the order named. The principal imports are cotton and cotton goods, wool and woollen goods, silk and silk goods, coffee, tobacco and metals. The principal exports are wood, sugar, cattle, glassware, iron and ironware, eggs, cereals, millinery and fancy goods, earthenware and pottery, and leather goods.

AUSTRIA

Austria is a country about twice the size of England and Wales, and, after Switzerland, the most mountainous country in Europe. Only 25 per cent. of the area is occupied by plains, of which the largest is the extension of the great Russian plain which constitutes the major part of the province of Galicia. Along the principal rivers there are plains of more or less magnitude possessing very fertile soil.

The highlands of Austria form part of the great watershed of Europe, which divides the waters flowing into the North Sea and the Baltic from those flowing into the Mediterranean or the Black Sea.

The principal rivers flowing through its territory are the Danube, Dniester, Vistula, Oder, Elbe. The Rhine flows only for a short distance through Austria. All the above rivers find their outlets to the sea in other countries, while the Danube also has its source in another country. Rising in the Black Forest in Germany, the Danube flows eastward by a very meandering course, 1,800 miles long, into the Black Sea. Vienna, Budapest and Belgrade are upon its banks, and by means of many tributaries it drains southern Germany, large portions of Austria-Hungary, Servia, Bulgaria, and Roumania. Few rivers in the world carry a greater commerce than the Danube or have played so important a part in history.

Climate

The climate of Austria varies greatly on account of the differences in elevation of its surface. Along the Adriatic, the winters are short and the seasons equable. and in the winter time, snow seldom falls. The vine and corn are everywhere cultivated, as well as the olive and other products of the south. In the central zone the winters are more severe and the summers hotter. The vine and corn are cultivated in favorable locations, and wheat and other grains are generally grown. The northern zone comprises Bohemia, N. Moravia, Silesia and Galicia. There the winters are long and cold, and the principal crops are wheat, barley, oats, rye, hemp and flax. The rainfall averages 20 to 24 inches, but in the vicinity of the Alps, it sometimes exceeds 60 inches.

Forests

The forests of Austria constitute one of the great sources of wealth, occupying over one-third of the whole productive area. Tall coniferous forests predominate. Forestry is carried on in a thoroughly scientific manner.

Minerals

Austria is exceedingly rich in minerals, possessing every useful metal except platinum. There are also salt, petroleum, marble, roofing-slate, porcelain earth, potter's clay, precious stones, and the precious metals. Iron of excellent quality is extracted in large quantities. The output of the coal mines was in 1900, 32,500,000 tons. In 1902, 156,000 persons were employed in mining, smelting and in the extraction of salt.

Railways

The country is provided with an extensive network of railways, the industrial section being specially favored. They have a total length of 13,600 miles, all being State operated and for the most part State owned.

Sea Coast

Austria's coast line on the Adriatic is only about a thousand miles in extent. It is indented with many bays and safe harbors, and there are numerous ports, including Trieste and Pola, the great naval harbor and arsenal.

Agriculture

The productive land of Austria covers over ninety per cent of the total divided about as follows: Arable land, 37.6 per cent., woodland, 34.6 per cent., pasture and meadow, 25.2 per cent., the balance being divided between garden, vineyards and undrained land. The principal products are wheat, rye, barley, oats, corn, potatoes, and sugar beets. Next come buckwheat, rape, hemp, flax, chicory, tobacco and hops. In the north, in Bohemia, Moravia, Silesia and Galicia, much land has been diverted from wheat growing to the cultivation of sugar beets. The growth and manufacture of tobacco is a government monopoly.

The quantity of cereals raised is not entirely sufficient for home requirements, and large amounts of wheat and corn are imported from Hungary. Barley and oats are exported.

Austria is distinguished for the superiority of its horses. For their improvement, numerous studs exist all over the country. As a cattle rearing country it is not remarkable. In the Alpine foothill region of Upper Austria cattle breeding and dairy farming have attained a great degree of development.

The number of live-stock in 1910 was:

Horses	1,800,000
Mules and asses	60,000
Cattle	9,000,000
Goats	1,000,000
Sheep	2,500,000
Pigs	6,000,000

Manufactures

The manufacturing industries of Austria have their greatest development in the basin of the Danube, and in the country extending northward to the German border. This territory comprises the provinces of Lower Austria, Bohemia, Moravia and Silesia. Lower Austria, of which the city of Vienna is the centre, is the most densely populated province, and the inhabitants are almost exclusively of German stock. The following are the principal branches of industry carried on in northern Austria: textiles, including cottons, woollens, silk, flax and hemp, iron and steel manufacturing, flour milling, brewing and distilling, leather, paper, sugar, glass, porcelain, earthenware, chemicals, scientific surgical and musical instruments. In Galicia, petroleum refining and the manufacture of petroleum products are important. Glass making, for which Bohemia is celebrated, is one of Austria's oldest industries, and other districts are noted for porcelain and earthenware. The manufacture of wooden articles is widespread and varied. The coarser kinds of woollen and linen goods are made in the people's homes all over the country, and in certain sections, toys, embroidery and lace are house industries.

Vienna in Lower Austria and Prague in Bohemia are the leading industrial cities. Vienna is a centre for the production of the following: Silk goods, shawls, machinery, railway rolling stock, scientific and musical instruments, boots and shoes, furniture, gloves, chemicals, buttons, and also for lithographic printing, engraving and map-making. Prague is an important producer of railway rolling stock, machinery, musical instruments, boots and gloves.

In 1900, Austria's manufacturing industries gave employment to 3,138,000 persons. Including families and domestic servants, 7,000,000 were dependent on industry for their livelihood.

HUNGARY

Hungary is composed of extensive central plains surrounded by high mountains,—the heavily-wooded Carpathians and the Transylvanian Alps. These plains cover an area of 43,000 square miles out of a total area of 125,402 square miles. The central plains are intersected by the rivers Danube, and Theiss, and the soil is in general very rich and productive.

The franchise of Hungary is said to be the most illiberal in Europe, being enjoyed by only 6 per cent. of the population. The working classes are wholly unrepresented in parliament.

The Jews monopolise a large portion of the country's trade. They are, with the Germans, the chief employers of labor, and control not only the finances, but to a great extent the government and press of the country. The soil, owing to the improvidence of the landowners and the poverty of the peasants is gradually passing into their hands.

The Hungarian climate is cold in winter and hot in summer. In the Carpathian Highlands, the winters are long and severe, while in the summer the central plains are almost tropical. There during the hot months it rains but seldom and droughts are not infrequent. In the mountains the rainfall is heavier

Agriculture

In Hungary, agriculture is pre-eminent. Nearly 96 per cent. of the total population derive their income from agriculture, forestry, horticulture and allied pursuits.

The progress of agriculture has been marked of recent years. Not only has more land been brought under cultivation, but agricultural methods have been improved through more intensive cultivation, the use of the most modern implements, and the application of scientific knowledge.

Hungary is one of the principal wheat growing regions of Europe. The average annual production of cereals is as follows:

Wheat	145,000,000	bushels
Rye	46,500,000	"
Barley	53,500,000	"
Oats	65,000,000	"
Corn	118,000,000	"

Owing to its wide stretches of pasture land, Hungary is admirably suited for cattle and sheep raising. Sheep are not raised as extensively as cattle, and are tending rapidly to decrease. Pigs are reared in large numbers all over the country. Horse-breeding is an important branch of stock-raising, large numbers of horses being exported annually to Germany, Austria, Italy and France. English stock has been imported by the government to improve the breed, and state studs supported by parliamentary grants have been established. Similar care has been bestowed in improving the breed of horned cattle.

The export trade in cattle is considerable. Pigs are exported almost exclusively to Austria. Sheep are not exported, but there is a considerable export trade in wool, and also in geese and eggs.

The number of livestock in 1912 was:

Horses	2,300,000
Cattle	7,300,000
Sheep	8,500,000
Pigs	7,500,000

Minerals

Hungary is one of the richest countries in Europe as regards both the variety and extent of its mineral wealth. Among the chief mineral products are coal, sulphur, alum, soda, saltpetre, iron, lead, copper, zinc, gold, silver, and mercury, and precious stones. The salt mines are a state monopoly. The value of mining and smelting production amounts to about $25,000,000 and the number of persons engaged is over 70,000.

Manufactures

The principal manufacturing industry of Hungary is flour-milling, and the products form the principal article of export. In 1905 there were 1845 mills in operation. Budapest is the centre of the industry, but large mills are established in many towns, and smaller ones throughout the country. Brewing and distilling, the manufacture of sugar from beets, tobacco, and other branches of industry connected with agriculture, have made great development.

Transportation

In the sparsely populated parts of the kingdom, the high road is still the only means of communication. Elsewhere, the railways are fairly adequate, but lack of means of communication has retarded the development of forest industries and of manufactures to some extent.

With only about one hundred miles of sea coast on the Adriatic, Hungary possesses only one important sea-port, that of Fiume, as a direct outlet by sea for its products.

SERBIA

Area, 18,782 square miles.
Population, 1910, 2,912,000.

Serbia is a mountainous inland country divided from Austria-Hungary by the rivers Danube, Drina and Save. One-tenth of the country is forest covered. More than four-fifths of the people are small farmers, the majority cultivating their own land. They are too independent to work in factories or even to enter domestic service. The women weave most of the garments for their families, besides sharing in every kind of manual labor.

Products

Relative to its population Serbia possesses a greater number of sheep (3,800,000 in 1910) and swine (864,000) than any other country in Europe. The swine are fattened on the beech-mast and acorns of the forest. Corn is the principal grain crop, and forms the staple diet of the country people. The normal annual yield exceeds 3,000,000 bushels, wheat 1,600,000. Flax, hemp, tobacco and sugar beets are grown. Vineyards and orchards are extensive. Cheese is made

from the milk of sheep and goats. Cattle are bred chiefly for export or draught purposes, and like the native horses, although strong, are small in size.

Commerce

Serbia has no seaboard, is far from export harbors, and is at the mercy of hostile tariffs. The export of swine is the principal branch of commerce. The chief manufacturing industries are those for which the country supplies the raw material, as meat-packing, flour-milling, brewing, tanning and weaving. There are also iron foundries, potteries, and sugar and tobacco factories.

Cotton and woollen fabrics, salt, sugar, iron and machinery are imported. Large quantities of prunes, grain, meat, hides, eggs and copper are exported, chiefly to Austria-Hungary, Germany and Turkey.

ITALY

The Kingdom of Italy is computed at 91,277 square miles. Its population of 26,800,000 in 1871 increased to 32,500,000 in 1901, and in 1912 was about 35,000,000. Italy is one of the most densely populated countries, having 313 people to the square mile, and, in spite of the large emigration, her population is rapidly growing. The excess of births over deaths was 11.14 in 1902.

The occupation of the people is given as follows:

Agriculture, including hunting and fishing	9,666,476
Industrial	4,505,736
Commerce and transport	1,003,888
Domestic service	574,855
Professions, administration, etc.	1,304,347
Other callings	333,905

The poverty of Italy is due, not so much to the Italians, as to the lack of those natural resources that form the basis of agricultural and industrial prosperity. A very large portion of her territory is mountainous, stony, and arid, and therefore unsuitable for agriculture. Only one third of the soil is able to produce food for man or beast, whereas approximately two-thirds of the territories possessed by Germany, France, the Netherlands, Belgium, Denmark and Austria are devoted to agriculture, and the remaining third of those countries is covered with forest. Italy has scarcely any forest. While 14 per cent. of the area is classed as forest, much of it is really brushwood, used for fuel and the manufacture of charcoal, coal being little used except for manufacturing purposes. On the plains and lowlands there is a large percentage of swamps, and malaria, although decreasing, is a serious impediment to agricultural pursuits. In recent years considerable areas of wet lands have been drained through Government help, and thereby the breeding grounds of mosquitoes have been reduced. The effect is that the health of the people is greatly safeguarded and land available for production much extended. The Campagna is being redeemed, after a thousand years of noxious existence.

While agricultural Italy is handicapped by lack of soil, and of rain and drinking water, industrial Italy is still more seriously hampered by a scarcity of coal and iron. She produces less coal per year than both Great Britain and Germany produce in a single day, while her production of iron ore is negligible in quantity. In fact Italy has no valuable mineral resources except sulphur. Her industrial development is further hampered by the total absence of navigable rivers, and by the mountainous nature of the country, which makes cheap transportation by rail impossible.

Agricultural laborers constitute one third of the population of Italy. Their lot is for the most part a hard one, and in some regions absolutely miserable. In view of this fact, and considering the density and rapid increase in population, and lack of natural resources, it is not to be wondered at that millions of Italians, drawn chiefly from the agricultural classes, should seek a living in foreign countries. It is noteworthy, however, that the majority of those who emigrate return to the country of their birth. The Italian emigrants have been of the greatest service to Italy. They have

benefited the country in two ways. First, their remittances of foreign gold have enriched the country to the extent of fully $100,000,000 per year, making money cheap and plentiful, to the advantage of trade, commerce and industry. Second, the emigrants who have returned from abroad have introduced modern methods of trade and agriculture, and they have infused into the country a new spirit of hope, energy, ambition and progress. It may be said that those returning from America in particular are modernizing the country.

Italian thrift is frequently mistaken for poverty by casual visitors to the country. In Italy, town-workers and country-workers alike accumulate savings with the greatest energy. In 1912, the amount on deposit in institutions for popular savings was about $1,400,000,000, or forty dollars per head of the population. This is the more remarkable when the fact is borne in mind that farms and houses are the favorite investments of Italians of small means. Financially, Italy is now in a far better position than she has ever been. The rapid increase in her wealth is indicated by the greatly improved position of the Italian banks, and by the marked improvement in Italy's national credit.

Agriculture

Since the time, some fifty years ago, when Italy became united, Italian agriculture has made rapid progress. This is particularly true of the last few decades.

Wheat is the most important and most widely grown of the cereals. The total production of wheat in 1912 was 160,000,000 bushels, the average yield being only 14 bushels per acre. In the same year 92,000,000 bushels of corn were grown. Next in importance come rye, barley, oats and rice.

The vine is cultivated throughout the length and breadth of the country. The area in vineyard has enormously increased, being about 16,000,000 acres or 14 per cent. of the total area. The average yearly production of wine during 1901–03 was not far short of a thousand million gallons, rather more than half of which is consumed in the country. The quality of Italian wine is never good enough to compete with the best wines of other countries.

After cereals and vineyards, the next most important cultivation is the olive. In 1905 the production of olive oil was 75,000,000 gallons.

Sugar beets are extensively grown to supply sugar factories. These factories increased from an output of 5,972 tons in 1898, to an output of 325,000 tons in 1913. Hemp, flax and cotton are grown to some extent, and tobacco shows a large increase of recent years.

Sicily is the centre for orange and lemon production, but these fruits are grown also in the mainland of Southern Italy. Almonds and walnuts are widely cultivated, while the extensive chestnut forests on the mountain slopes are of great value both for wood and fruit. The average production of silk for the period 1900–04 was 5,200 tons.

The number of live-stock shows a continuous and gratifying increase over a term of years, particularly as regards cattle and sheep. The number on hand is as follows:

		Increase since 1876.
Horses	955,878	60 per cent.
Asses	849,723	
Mules	388,337	
Cattle	6,218,227	80 per cent.
Sheep	11,162,926	
Goats	2,714,878	60 per cent.
Swine	2,507,798	

Enormous flocks of sheep are pastured in the mountains in summer and brought down to the plains in the winter.

Northern Italy has long been noted for its great dairy districts. With the introduction of modern methods and of co-operation, progress has been marked in the production of both cheese and butter. In 1910 there were 1,035 co-operative dairies in Italy. The largest dairy in the world is located at Soresina near Cremona. It works daily 92,400 pounds of milk.

The large increase in the importation of chemical fertilizers and of machinery

bears witness to the progress being made in agricultural development. During the past twenty-five or thirty years the imports of agricultural machinery have increased fifteen-fold in value, while the imports of fertilizers have increased seventeen-fold in value.

Commerce and Industry

Up to a comparatively recent time, Italy was almost exclusively an agricultural state, but of late years her manufacturing industries have greatly expanded. This has been based largely on the development of electrical power derived from the waterfalls. The continued development of this source of power may perhaps compensate her for the lack of coal, and is bound to be an important factor in her industrial progress.

The progress of the Italian cotton industry is particularly noteworthy. Between 1900 and 1909, the number of active cotton spindles more than doubled, and since 1887 the increase in the export of cotton goods has been between sixty and seventy-fold. The other textile industries—silk, woollen, flax and jute—have also made notable advances. Great progress has been made in the manufacture of machinery of all kinds, especially in the north. For steel making, foreign pig iron is chiefly used.

The countries with which Italy does most of her foreign trade are: Imports—United Kingdom, Germany, United States France, Russia and India. Exports—Switzerland, United States, Germany, France, United Kingdom and Argentina.

Both the importations of raw material and the exportation of manufactured articles have increased of recent years. The most important imports are coal, iron, cotton, silk, wheat, flour, corn and cattle. The chief exports are silk and cotton goods, wines, spirits and oil, fruit, macaroni, live-stock and sulphur.

The importation of wheat increased from 164,600 tons in 1882 to 1,126,368 tons in 1902. The importation of corn was 208,719 tons in 1902, or double the amount imported in 1882.

Italy's exports of butter and cheese, oranges and lemons, almonds, oil and rice show a large increase since 1882. Latterly, however, oil and wine show a tendency to decrease. In 1905, she exported 15,000 head of cattle, 27,000 sheep, and 94,500 swine in excess of the number imported. Since 1882, the exports of cattle and sheep show a large decrease, while swine show a large increase. Horses to the number of 46,500 were imported in 1902, and the importation is growing.

The excess of imports over exports has never been less in recent years than $60,000,000.

Italy has co-operative associations, agricultural banks, agricultural high schools and travelling instructors in agriculture.

Italy, the degenerated offspring of a world-famous civilization, has been making great strides in recent years and is rapidly progressing among the peoples of Europe.

DENMARK

Area—Jutland..... 9,753
Islands..... 5,076

Total..... 14,829 square miles.
Population, 1912..... 2,800,000

Density per square mile—Islands, 273, Mainland, 109. Of the population 1,385,537 occupy the islands. Large tracts of the interior of the mainland are almost uninhabited.

Occupation of the People

Farming	918,000
Gardening	16,000
Forestry	16,000
Fisheries	34,000
Industrial pursuits	675,000
Professions, etc	114,000
	1,773,000

Until the middle of the last century, the Danes were chiefly grain farmers. Owing to the competition of Russia and the United States, what they produced could not be sold at a fair profit. Their soil was impoverished; there were no

industries. They were in the depths of despair and poverty. Germany had seized the province of Schleswig. Few countries have faced so forlorn an outlook. A new era of agricultural prosperity was achieved, and the country saved from ruin, first, by a complete revolution in agricultural methods through education, and second, by the substitution, for individual effort, of the co-operative system of manufacturing and selling the products of the farm.

Through the organization of credit societies, and by State aid, capital was supplied, not only for the purchase of small holdings, but for farm improvements. One result of this has been to check the exodus to the cities, which few other countries have succeeded in doing.

The following figures show the growth in productive capacity as indicated by the exports of farm products:

	Average exports, 1875–1879	Exports, 1908
Horses.....	$1,750,000	$3,000,000
Cattle.....	5,250,000	7,000,000
Bacon and lard.	750,000	26,500,000
Butter.....	6,500,000	45,750,000
Eggs.....	250,000	6,600,000
Total.....	$14,500,000	$88,850,000

Denmark is a farmer State, with a farmer parliament, a farmer ministry and a farmer point of view. The land is far from rich, the climate not of the best, and the winters are long; but the farmer owns the land. Whereas in England, Prussia and Russia the land is still to a great extent in the hands of large proprietors and worked by tenants or by hired labor, the Danish farmer is his own landlord. Only 11 per cent. are tenants. On this fact the whole economic framework is built.

The things that make Denmark unique are, first, almost universal land ownership by the farmers; second, the co-operative movement; and third, the political supremacy of the farming class. The second and third factors are due to the first.

The Dane is the best farmer in the world, and the secret of success is intensive farming. The hundred thousand farmers with holdings ranging from 13½ to 150 acres (seven-tenths of the land) are the ruling class. They control the politics of their district, and are ascendant in parliament. They are well educated, live well, devote much time to politics and co-operative undertakings, and know all about the most technical agriculture. The amount of wealth, which is very evenly distributed, is probably greater per capita than that of any other country. But they are not consumed with the ambition to be rich or to acquire more land; their only ambition is to be good farmers.

There are 1,150 co-operative dairies (besides 200 private dairies), 38 co-operative slaughter-houses, 1,310 cattle-breeding associations, 260 horse-breeding associations, 250 swine-breeding associations. The breeding associations are state supported. Nearly 95 per cent. of the farmers are members of co-operative dairies. The Co-operative Egg Export Society has a membership of 40,000. Through the co-operative marketing of his butter, bacon and eggs, the Danish farmer saves the profits that formerly went to the jobber. Through co-operative stores (of which there are 1,400, selling $20,000,000 of goods annually), he saves on the cost of what he has to buy.

The total value of imports into Denmark in 1909 was $157,190,000, whilst the Danish products exported amounted to $123,025,000.

Fully 80 per cent. of the country's export trade falls under the head of agricultural produce, while industry represents 8 per cent., and fishing, 4 per cent.

By far the most important exports may be classed as food of animal origin. The value of the butter exported reaches nearly 40 per cent. of the total. Next in importance come bacon and eggs. Great Britain takes annually the following:

Butter.....	190,000,000 lbs.
Bacon, etc.....	216,000,000 lbs.
Eggs.....	37,000,000 doz.

Other exports are dairy cattle, horses, beef, vegetables, wool, bones, tallow, dairy machinery and cement. Germany takes three-fifths of the meat (beef, fresh

and salted, 18,722,000 lbs. in 1909) and most of the horses and cattle exported.

As Denmark lacks water power and coal, fuel has to be imported. Her factories supply mainly local needs. The leading industries are ship and engine building, and the manufacture of woollens, cottons, linen, sugar, porcelain, paper, cement, margarine (mainly for home consumption instead of butter), distilling and brewing. About half the sugar consumed is produced in the country.

Of the total exports, Great Britain takes 60 per cent., Germany 18 per cent., and Sweden 10 per cent.

The principal imports in 1909 were as follows:

CEREALS, ETC.—		
Wheat	95,170	metric tons*
Rye	148,215	" "
Rye, ground	16,865	" "
Oats	62,430	" "
Barley	115,645	" "
Bran	70,660	" "
Oil cake	474,520	" "
Corn	229,840	" "
Potato flour	8,295	" "
OTHER FOODS—		
Coffee	15,650	metric tons
Fat	8,045	" "
Margarine	11,290	" "
Sugar	27,385	" "
Oranges	4,185	" "
Tobacco, raw	1,500	" "
Wine and spirits	686,250	gallons
MATERIALS—		
Wool, woollen yarn and shoddy	3,505	metric tons
Cotton and cotton yarn	7,125	" "
Hides and skins	4,165	" "
Copra	16,855	" "
Timber	22,420,000	cubic feet
Coal	2,766,000	metric tons
Petroleum	73,680	" "
Glass, sheet	5,155	" "
Rails	22,495	" "
Iron rods and bands	48,705	" "
Tin plates	20,225	" "

*The metric ton is ten per cent. larger than the short ton.

Of Denmark's imports, Germany supplies 30 per cent., Great Britain 20 per cent. and the United States 16 per cent.

With Russia, Norway and France (in this order) general trade is less important than with the above named countries, but still large.

THE NETHERLANDS
(Holland)

Area.....12,648 square miles.
Population (in 1911).....6,022,000
Density per square mile.....404

Production

Nearly 35 per cent. of the total surface is under permanent pasture, and cattle breeding is one of the most characteristic industries. The products of cultivation are oats, barley, wheat, rye, buckwheat, potatoes, sugar beets, hemp, flax, chicory and tobacco. The horticultural products are vegetables, fruit and bulbs.

The fisheries not only supply local demands but allow of large exports.

The manufacturing industries are cotton, woollen and linen goods, carpets, distilling and brewing, shoes and leather, paper, earthenware, articles of food, broom and mat-making, diamond cutting, cigar making, and ship building.

Commerce

Holland imports manufactured goods and coal from England and Belgium, petroleum, cotton and cereals from the United States, grain from Russia via the Baltic and Black Seas, and lumber from Norway, yarn from England, wine from France, iron from Spain, and coffee, sugar, tobacco and spices from her colonies. Corn is imported in large quantities for cattle feeding, and barley for distilling and brewing. Usually sufficient oats are grown for home consumption.

Holland exports agricultural and horticultural produce to England, fish to Belgium and Germany, cheese to France, Belgium, Germany and England. Bulbous plants to the value of $1,000,000 are exported. The bulk of the trade of the

Netherlands is with England and Germany; then follow Java, Belgium, Russia and the United States.

A great part of the commercial business of Rotterdam belongs to the commission and transit trades.

LIVE STOCK IN 1910:—

Horses	327,000
Cattle	2,026,000
Hogs	1,260,000
Sheep	889,000
Goats	224,000

The total value of the yearly agricultural production is about (600,000,000 guilders) $240,000,000.

PRINCIPAL EXPORTS:—

Butter	$18,000,000
Cheese	14,000,000
Cattle	12,000,000
Meat	10,000,000
Horticultural produce	8,000,000
Starch	3,500,000
Strawboard	2,500,000

NORWAY

Area.....124,495 square miles
Population (1911).....2,412,000

Of the total area, 70 per cent. is classed as barren, 21 per cent. as forest. About two-thirds of the population dwell by the coast. A vast area in the north is practically uninhabited.

Rural population, 76 per cent.; urban 24 per cent. Agriculture gives employment to about 40 per cent.

Products

The chief crops are oats, barley and potatoes. Cattle and sheep are kept largely.

Lumbering is a leading industry. The sea fisheries are of high economic importance, cod fisheries being the principal.

The manufacturing industries are those connected with the timber trade, foundries and engineering shops, spinning and weaving, brick and tile, brewing and distilling, paper, tobacco, flour, glass, pottery, nails, rope, shipbuilding, preserved fish, fish guano, margarine, matches, boots, and tanning.

Commerce

The Norwegians, in proportion to their numbers, are the first nation in the world in the mercantile marine industry. Their steam vessel tonnage exceeds 640,000.

Norway's principal trade is with Great Britain and Germany. Great Britain takes 40 per cent. of her exports and sends 20 per cent. of her imports. Germany takes 14 per cent. of the exports and sends 28 per cent. of the imports. The chief exports are timber, wooden wares and wood pulp, principally to Great Britain, and fish products to Germany, Sweden and Spain. Other exports are paper, nails, ships and building stone.

The imports and countries whence derived are: Cereals (Russia), groceries (Germany), clothing (Germany and Great Britain), coal (Great Britain), hides, cotton, wool, oil, machinery, steamships and metal goods (Great Britain, Germany and Sweden).

SWEDEN

Area.....173,547 square miles
Population (1911).....5,562,000

The population is densest in the southern provinces, while the north is thinly peopled and contains very little arable land. About half the total area is under forest. Agriculture employs over one half of the people.

Products

Oats, rye, barley and wheat are the grain crops in order of importance. Potatoes, roots and sugar beets are grown, and live stock and dairying are leading industries. The live stock number 5,263,000, being chiefly cattle and swine.

Lumbering, saw-milling, wood-pulp production and iron mining are very important. The production of iron ore was 2,850,000 tons in 1902. The production of pig iron, wrought iron and steel is increasing. Other manufactures are machinery, cutlery, textiles, matches, sugar, distilling, and earthenware.

Commerce

Of the total exports, timber and timber products represent 50 per cent. These include railway-ties, pit-props and wood-pulp. The percentages of other exports are: iron and steel, 13.5; iron ore, 3.6; machinery and implements and other iron and steel goods, 6; butter, 10; paper, 3.4; matches, 2.3. Matches and paper go largely to Great Britain.

Imports: Coal and coke, 15 (mostly from Great Britain); grain, 8; coffee, 4.6 (coffee and tobacco come chiefly through Germany); machinery, 4; cotton and woollen goods, etc., 9.4; hides and skins, 2.5.

The United Kingdom takes 38 per cent. of the exports, and sends 25.7 per cent of the imports; Germany takes 16 per cent. of the exports, and sends 39 per cent. of the imports; Denmark takes 14 per cent. and sends 12.5 per cent. Sweden also exports to France, Holland and Norway, and imports from Russia.

Sweden's transit trade forms a very large proportion of the whole. Her steam vessel tonnage is 380,000.

SWITZERLAND (Republic of)

Boundaries:—North, Germany; East, Austria; South, Italy; West, France.

Area.....15,951 square miles
Population, 1911.....3,781,000

There is a large non-Swiss element in the population. It includes Germans, Italians, French, Austrians, and citizens of Great Britain and the United States. German is the language of about 70 per cent. of the people.

One-third of the population are engaged in agricultural pursuits, exclusive of market gardening and forestry.

Products

Switzerland is more of a pastoral than an agricultural country.

Cattle.....1,400,000
Swine.....570,000
Sheep.....160,000
Goats.....350,000

Cheese, condensed milk and wine are important products.

The leading manufacturing industries are cotton and silk weaving, watchmaking, embroidery, and machinery.

The principal Swiss industry is the entertainment of visitors, the gross receipts from this source amounting to $37,500,000 to $40,000,000.

The country is largely dependent on imports for its food supply, and for raw materials for manufacture.

In 1905, the imports were valued at $275,000,000, and the exports at $193,750,000.

The exports include: Silk, $50,000,000; embroideries, $25,000,000; watches, $26,250,000; machinery, $11,250,000.

RUMANIA

Area.....50,720 square miles
Population, 1912....7,248,000.

Rumania extends from the shores of the Black Sea westward to the Transylvanian mountains, which divide it from Hungary. The Danube divides it from Bulgaria to the south, and to the north and east is the Russian Empire.

The Rumanians are proud of their race and country, and look forward to the day that will unite them to their kinsmen in Transylvania (Hungary) and in Bessarabia (Russia). The agricultural classes are hardy, frugal and inured to toil, but very superstitious. Their staple diet consists of vegetables and corn meal porridge. Beef, mutton and port are rarely eaten, but veal is commonly used.

Products

In 1900, Rumania ranked third after the United States and Russia among the grain growing countries of the world. Since then its relative importance has been lessened by the development of wheat growing in Canada and Argentina. Corn is the next most important cereal. Beans, potatoes, beets and tobacco are grown. Rumania is also a wine-producing country, and on the uplands fruit-growing is general. Cattle, sheep and swine

raising are the more important branches of the live-stock industry. Cheese is made from ewe's milk.

The petroleum deposits are among the most important in the world. The American Standard Oil is largely interested. The output in 1909 was 1,300,000 metric tons. Many valuable minerals occur, and salt, lignite and brown coal are largely worked. Lumbering is important, although the forests have been recklessly exploited.

The manufactures, which employ native raw materials, are few and unimportant.

Commerce

Commerce depends largely on the grain harvest and fluctuates accordingly. The principal imports are metals, machinery and textiles, silk, wool, hair and hides. The imports come chiefly from Germany, Austria-Hungary, Great Britain and France.

Grain and timber are by far the most important exports. Lumber is exported to Turkey and Bulgaria; casks, planks and petroleum drums go chiefly to Austria and Russia. The remaining exports consist of live stock, fruit and vegetables. The exports go chiefly to Belgium, Great Britain and Italy. Swine and pork are largely exported to Russia and to Austria-Hungary.

BULGARIA

To the south of Rumania, and divided from it by the Danube, lies the Kingdom of Bulgaria, with its eastern front on the Black Sea, and the Serbian border on the west.

Population in 1910, 4,317,000.

The Balkan mountains run east and west through the heart of the country.

At the outbreak of the recent war with Turkey, its area was 37,240 square miles. In 1901 its population was 3,744,283, at which time it was estimated that 1,500,000 Bulgars lived outside its limits. The Bulgars are patient, enduring, industrious and thrifty, but reserved and superstitious, and almost entirely illiterate.

Products

Agriculture, the main source of wealth, and the occupation of 75 per cent. of the people, is in an extemely primitive condition. Wheat, corn, rye, barley, oats, millet, and rice are grown; also grapes, tobacco, silk and cotton.

The mineral wealth, with the exception of coal, remains unexploited.

Manufactures are unimportant, but a homespun of excellent quality is made.

The principal exports are cereals (80 per cent.), homespuns, hides, cheese, eggs, attar of roses. The imports are textiles, metal goods, implements, furniture, leather and petroleum.

UNITED STATES' FOOD SUPPLIES

"There is the general impression that the American farmer can feed the rest of the world. Statistics tell another tale, and I have just finished working up a few that show that our greatest agricultural product for export is wheat. When we look at the large amount of agricultural products shipped into this country we are obliged to speak with caution of what part the United States could play in feeding the warring nations. We have our own millions to feed first."

These are the words of Mr. Nat. C. Murray of the Federal Bureau of Crop Estimates, and the following table gives the summary on which the above statement is based. The figures are for the year 1913–14.

	Edible Grains	Meats	Dairy Products	Poultry and Eggs	Vegetables	Sugar	Fruits and Nuts
U.S. Production	766	1986	800	600	554	69	250
Imports	19	40	16	4	20	217	48
Exports	160	148	147	4	14	4	31
Balance of Imports	141	108	131	....	....	....	....
Balance of Exports	....	....	....	....	6	213	17
Home production	% 123	% 106	% 120	% 100	% 99	% 24	% 94
Imports	3	2	2	1	4	77	18
Exports	26	8	22	1	3	1	12

The figures of production imports and exports in the first half of the table are millions of dollars.

"It will be seen that in the case of many foodstuffs we do not produce a sufficient quantity to supply our own needs. In other cases we have a very small margin left for the other fellow. On the whole we take care of pretty nearly all we produce of foodstuffs with the exception of some grains, meats and dairy products. And we are rapidly getting to the point where we consume even more of the latter than in previous years."

PORTUGAL (Republic)

Area.....34,254 square miles
Population, 1910.....5,375,000

These figures do not include the Azores and Madeira Islands. Coast line, 500 miles. Six-sevenths of the population inhabit the country north of the river Tagus.

The country people of the northern provinces are sober, hardy and industrious. Many of them emigrate to Brazil. The staple diet of the working classes is fish, rice, beans, corn meal, olive oil, fruit, and vegetables.

More than 45 per cent. of the country is uncultivated. The grain crops are corn, wheat and rye. In some sections rice is grown. Vineyards are general, and wine making is an important industry. Other fruits in great variety are grown, ranging from citrus and olive, to apples, pears, cherries and plums. Cork trees are extensively cultivated. Large herds of swine are fed in the oak and chestnut woods. Sheep and goats are reared in the mountains, where excellent cheese is made from goat's milk.

Sardine, tunny and other fisheries give employment to large numbers. The fisher folk form a distinct class. Both sexes are noted for their bodily strength, and the men for their bold and skilful seamanship. Tunny and sardines are cured and exported in large quantities. The average yearly value of the products of the fishing industry is about $4,000,000.

During the last twenty years, the cotton and spinning industries have become the next most important after agriculture, the wine and cork trades and the fisheries. In Lisbon and other cities, the industries include tanning, distilling, metal working, soap, flour and tobacco; all for home consumption. The exquisite lace made in some districts is strangely neglected abroad.

The industrial population numbered 455,000 in 1900.

Value of exports in 1905, about $32,000,000, and of imports $67,000,000.

The exports in order of value were, wine, cork, preserved fish, fruits and vegetables, copper, timber, olive oil, skins, tobacco and wool. The imports were raw and manufactured cotton, wool and silk, wheat and corn, iron and machinery, dried cod fish, sugar, rice, hides, skins and oils. The United Kingdom takes annually wine to the value of about $4,500,000 and cork to the value of $2,500,000, and is the chief consumer of Portuguese goods and the chief exporter to Portugal. Germany and the United States rank respectively second and third.

Portugal imports dried codfish from Norway, Newfoundland and Canada. The recent removal of restrictions through the British-Portugal alliance will greatly stimulate Canadian trade in fish.

GREECE

Greece has an area of about 25,000 square miles, and a population, in 1907, of 2,632,000. These are approximate figures, and do not take into account any territory that may have been added since the recent war with Turkey.

The population is densest on the Ionian Islands, where it exceeds 307 to the square mile. The city of Athens in 1907 had a population of 167,500. There are no other cities having 100,000 inhabitants.

The Greeks are in spirit the most democratic of the European peoples. They have a passion for politics, and are intensely patriotic. Their ideal is Hellenic supremacy in Southern Europe. In a general way they may be described as a clever, ambitious and versatile people,

capable of great effort and sacrifice, but deficient in some of the more solid qualities that make for national greatness.

The general aspect of the country presents striking and interesting contrasts. Fertile tracts covered with vineyards, olive groves, wheat fields or forest are interspersed with rugged heights and rocky precipices. The broken nature of the coast line, unique in this respect, affords frequent glimpses of the sea and adds to the charm and variety.

In respect to the vegetation of the country, it may be said that up to 1,500 feet above sea level, oranges, olives, dates, almonds, figs, and vines flourish, and cotton and tobacco are grown. Above that is the region of the oak and chestnut, and similar trees. Then come pines and beech, etc. Above 5,500 feet the mountains are magnificent with flowering alpine plants.

In so mountainous a country, the tracts suitable for cultivation, consisting of small alluvial plains, and enclosed valleys and basins, are necessarily isolated one from another, but as a rule, possess easy access to the sea. Few districts are more than fifty miles from the sea. There are some extensive table-lands at an altitude of from two to three thousand feet.

Greece depends for her prosperity on the products of agriculture, and while more than half the population is engaged in this and kindred pursuits, instruction in scientific agriculture is very much neglected, and the industry is in a very primitive state. The soil of the plains and valleys is exceedingly rich, and wherever there is a sufficiency of moisture, produces wonderful crops. Nevertheless, cereals are the principal import.

About 3 million acres are devoted to field crops, which include wheat, corn, rye, barley and oats. Meadows and pasture comprise 7,500,000 acres; vineyards, 337,500 acres, and currant plantations, 175,000 acres. There are about 10 million olive trees on 250,000 acres. Of other fruit trees, there are 125,000 acres, but they are seldom scientifically cultivated. Rice, cotton and tobacco are grown in certain districts.

The currant is by far the most important of Greek exports. It can be grown only in a limited district, and of recent years its culture has been extended at the expense of other fruit trees, which have been cut down to make room for it. The crop in 1905 was 163,000 tons, of which 61,700 tons were exported to Great Britain.

Beef is scarcely eaten in Greece, cows milk is rarely drunk, and butter is almost unknown. Cheese, a staple article of diet, is made from the milk of sheep and goats. There are 137 goats to every 100 of the inhabitants. The native oxen are small.

Live stock in 1899:

Oxen	408,744
Horses	157,068
Mules	88,869
Donkeys	141,174
Sheep	4,568,151
Goats	3,339,439
Swine	79,716

Commerce

Greece does not possess any manufacturing industries on a large scale; the absence of a native coal supply is an obstacle to their development. On account of the natural aptitude of the Greeks for commerce and their liking for a seafaring life, a great portion of the water borne trade of the Levant has fallen into their hands. Important Greek mercantile colonies exist in all the larger ports of the Mediterranean and Black Sea, and many of them possess great wealth. Almost the whole wheat trade of Turkey is in Greek hands.

In 1902, imports were valued at $26,350,000, and exports at $15,300,000. The great excess of imports is caused by the large importation of food stuffs and manufactured articles due to neglected agriculture and the undeveloped condition of local industries.

The chief imports are cereals, textiles, minerals, coal and metals, forest products yarn and tissues, fish, hides, animals, paper, coffee, sugar, rice and colors. Britain supplies most of the coal, yarn and tissues, and more than a third of the textiles.

The chief exports are, currants, minerals, wines, tobacco and olive oil.

Greece imports chiefly from Great Britain, Russia, Austria-Hungary, Turkey, Germany, France, and Italy, and exports to Great Britain, Austria-Hungary, Germany, France, Holland, United States, and Egypt, Great Britain taking over a third of the total value.

MONTENEGRO

Prior to the recent war between Turkey and the Balkan States, Montenegro's area was 3,255 square miles, or considerably less than half the size of Wales. In 1907 the population numbered 282,000. In 1905, between six and seven thousand persons emigrated, chiefly to America.

The country is a chaos of mountains with scenery resembling that of Switzerland or the Tirol. There is some fertile land in the river valleys. In the northwest there are finely wooded tracts and rich, grassy uplands dotted with small lakes.

The Montenegrins are a primitive race. Personal valor is regarded as the highest virtue, and warlike prowess constitutes the principal claim to distinction. They possess the poetic high-flown temperament of the Serbs, and delight in the recitation of their martial deeds. While brave, proud, chivalrous and patriotic, they are, on the other hand, vain, lazy, cruel and revengeful. The men are tall, muscular and wonderfully active. Their dignity does not permit them to carry burdens nor to work at industrial pursuits. The women do the work of the fields, and are treated as inferior beings.

The food of the people consists of rye, or corn cake, cheese and potatoes. Meat is but seldom eaten.

Except in the lowlands, which furnish wheat, corn, barley, rye and potatoes, there is little tillage, and methods and implements are alike primitive. Tobacco and grapes are cultivated.

Stock-raising is more largely carried on than agriculture. Swine fatten in the beech woods, goats and sheep thrive on the high pastures, and the lower slopes afford good grazing for larger stock.

There are practically no manufactures, and exports and imports are insignificant.

SOUTH AFRICA
(Union of)

The Union of South Africa consists of the following Provinces:

Cape of Good Hope	276,995	sq. miles
Natal	32,290	"
Transvaal	110,425	"
Orange Free State	50,390	"
Total	470,100	sq. miles

The British States not included in the Union are Southern Rhodesia, Basutoland, Bechuanaland, Swaziland.

Population of the Union, 1911:

Whites, or European	1,276,242
Natives	4,019,006
Colored	678,146
	5,973,394

The proportion of Europeans to the total was 21.37 per cent.

While gold and diamond mining continue to be the greatest of South African industries, other sources of wealth have been added, and are steadily being developed.

Commerce and Trade

Total value of imports and exports in 1912 and for the six year period 1906-1911:

	Imports	Exports	Total
1912	$189,016,281	$306,474,500	$495,480,800
1906-1911	488,275,000	1,477,913,500	2,433,388,400

The annual average of imports for the six year period from Great Britain was 56.6 per cent, and from other countries 43.4 per cent.

Of exports for the same period (including gold and diamonds) the annual average to Great Britain was 91.6 per cent., and to other countries, 8.4 per cent.

Canadian Trade

	Imports from S. Africa	Exports to S. Africa
1912-13.....	$267,700	$3,340,500
1913-14.....	477,000	3,835,000

Next to Great Britain, the countries doing most trade with South Africa are Australia, New Zealand, Germany, United States, Canada, Brazil, India, Belgium, Holland and France.

Diamonds

The total output in 1912 was valued at $48,966,000. Of this, the Kimberley mines alone produced to the value of $27,417,300.

Gold

Raw gold to the value of $165,000,000 was exported in 1909.

Other leading exports are:

Wool, 1908, value, about.... $18,000,000
Ostrich feathers, about..... 10,000,000

The imports are of a general nature, textiles and food stuffs being the most important.

The chief products by Provinces are the following:

Province of Cape of Good Hope: Wool, mohair, brandy, Indian and Kafir corn, potatoes, dairy products, cattle, sheep, pigs. The mineral resources are very great, and coal-mining is important.

Transvaal: Gold, diamonds, coal, tin, copper, lead, tobacco.

Orange Free State: Diamonds, coal, salt. Stock-farming is the most important branch of agriculture. Grain-farming is steadily developing.

NEW ZEALAND
(Dominion of)

Area..... 104,354 sq. miles
Population..... 1,008,468 "

The Dominion consists of three principal islands, and a number of island dependencies.

	Area sq. miles	Population.
North Island.....	44,673	563,729
South Island.....	57,923	444,120
Stewart Island.....	665	357

The total trade in 1912 was valued at $208,000,000. Imports $102,000,000; exports, $103,000,000. In 1886 the total trade was valued at $65,368,000, and in 1906 at $162,092,000.

Canadian Trade with New Zealand was as follows:

	Imports from N.Z.	Exports to N.Z.
1912-13.....	$3,066,500	$1,698,000
1913-14.....	3,302,250	1,936,000

Wool is the most important product, comprising about one-third of the total value of the exports.

1910, value of wool exported.. $40,434,260
1911, value of wool exported.. 31,592,792

The production of the dairying industry in 1911 was:

Butter..... 492,500 cwt.
Cheese..... 467,700 "

In that year, 302,387 cwt. of butter and 439,174 cwt. of cheese were exported. Frozen meat to the value of about $20,000,000 is exported annually.

Live Stock in 1912:

Horses.....	404,688
Cattle.....	2,020,171
Sheep.....	24,200,000
Swine.....	383,000
Poultry.....	3,691,957

Crop Production in 1911-12:

Wheat.....	7,261,138	bushels
Oats.....	19,662,684	"
Barley.....	1,254,684	"
Peas.....	645,850	"
Rye Grass.....	2,198,893	"
Corn.....	298,252	"
Potatoes.....	144,912	tons

New Zealand is this year importing wheat from Canada.

Minerals and Mining

The leading products of the mine in 1911 were:

Gold.....	$8,841,500	
Silver.....	640,400	
Coal.....	2,066,000	tons
Fossil resin.....	7,587	"

Total value of mine products, about $17,000,000.

AUSTRALIA

(Commonwealth of)

Area, 2,974,851 square miles (four-fifths the size of Canada).

Population, estimated, 1913, 4,837,000.

The population is almost entirely of British origin.

A little more than half of the island continent of Australia lies within the temperate zone, and the balance within the tropical zone. The climate presents a great variety of features. On the coast there is an abundant rainfall and a moist atmosphere. In various portions of the interior the rainfall is very limited, and the atmosphere dry. The distribution of forest and its climatic influence is therefore variable. In the interior, there are large treeless areas where the air is hot and parched. On the coast, vegetation is luxuriant, and to the north, somewhat tropical in character.

Agriculture

The pastoral industry is the chief source of wealth. The flocks of Australia represent one-sixth of the world's sheep, and the value of the wool output in 1911 was about $126,880,000.

The perfecting of refrigeration in over-sea carriage has greatly extended the markets for Australian beef, mutton and butter. The annual output of butter is over 160 million pounds.

Grain growing is the next most important branch of agriculture. The production and value of the leading crops in 1911-12 is given as follows:

	Bushels	Value
Wheat	71,636,000	$64,743,000
Oats	....	9,561,771
Corn	9,040,000	7,971,000
Barley	2,057,000	2,351,000
Hay (tons)	2,868,000	50,072,000

Potatoes are grown on 140,000 acres, and sugar cane on 150,000 acres.

The vine is cultivated on 65,000 acres. Nearly all varieties of fruit are produced in abundance, and oranges, pineapples, bananas and apples are exported.

Mining

Australia is one of the great gold producing countries of the world. In 1905 the gold produced was valued at $80,000,000, being one-fourth of the world's output. The total output of the mines, including gold, silver, copper, iron, coal and other minerals and gems was valued at $129,000,000. The mining industry gives employment to over 70,000 men.

Timber

The annual production of timber is valued at about $11,000,000. Saw milling gives employment to 5,000 men.

Pearl Fishing

This industry yields an annual output of pearls and pearl-shell to the value of about $2,500,000.

Commerce

Value of Exports and Imports:

	Imports	Exports	Total
1905	$186,366,000	$275,247,000	$461,614,000
1911	325,908,000	386,814,000	712,722,000
1912	380,372,000	384,934,000	765,306,000

In 1905 the percentage of exports to imports was 48 per cent., in 1911 it was 18.7 per cent, and in 1912 1.2 per cent.

The principal items of export are, wool, skins, tallow, frozen mutton, chilled beef, preserved meats, butter, timber, wheat, flour, fruit, gold, silver, lead, copper, tin, and other metals.

Wool: value of export for five years:

1907-1911 ..... $643,070,000
Annual average 128,614,000

Dairy produce:

Value of farm-yard and dairy exports for five years, 1907-11 ..... $79,324,000
Annual average 15,865,000

About 64,000,000 lbs. of butter are shipped annually to Great Britain.

Fruit: value of fruit exports 1911 ..... $1,095,000

Wheat: Quantity of wheat exported for five years, 1907-11, 178,271,000 bush.
Annual average .... 35,650,000 "

The distribution of the wheat exported during the above period (1907-1911) was as follows:

United Kingdom	133,531,111	bushels
South African Union	15,326,500	"
India	618,000	"
New Zealand	160,750	"
Ceylon	7,800	"
Foreign Countries	28,627,000	"

The chief imports are apparel and textiles, machinery and hardware, stimulants, narcotics, explosives, bags and sacks, books and paper, oil and tea.

The value of timber imported in excess of exports in 1910 was $8,450,000.

Canadian Trade

	Imports from Australia	Exports to Australia
1912-13	$438,670	$3,996,387
1913-14	862,180	4,705,822

During 1914 Australia suffered severely from drouth. Immense losses were sustained in cattle and sheep. The following trade note on wheat is of date January 1st, 1915.

The official estimate of the Australian wheat crop is 25,000,000 bushels, while home requirements are about 40,000,000 bushels. This leaves a deficiency of 15,000,000 bushels to be imported against an export last year of 66,000,000 bushels. The official estimate is lower than the commercial estimate current a month ago.

EGYPT

Area, 400,000 square miles.

Population, 11,287,360.

Fourteen-fifteenths of Egypt is desert. But for the Nile, there would be nothing to distinguish the country from other parts of the Sahara. The river by its annual overflow has created the rich delta lands and the fertile strip in Upper Egypt. This cultivable land constitutes Egypt proper. The Suez Canal at the eastern boundary of the Nile Delta, connects the Mediterranean with the Red Sea, thus opening the chief trade route to India and the East.

Cotton, sugar and rice are the chief summer crops; wheat, barley, flax and vegetables are largely winter crops. Egypt is third among the cotton producing countries of the world, but because of restricted area, the bulk raised is not more than one-tenth of that of the United States, and about one-half that of India. Sugar cane plantations, covering 100,000 acres, are mainly in Upper Egypt. The sugar beet is also grown to a limited extent. Some 2,000,000 acres are sown to wheat and barley yearly. Rice is grown on the Nile Delta. Corn and millet are widely grown and with dates, form the staple food of the people.

Flour milling and cotton ginning mills are numerous, and there are a number of sugar factories. Native industries include the weaving of silk, wool, linen and cotton goods, pottery, cigarette making, and ornamental wood and metal work.

Cotton constitutes three-quarters of the total value of the exports. Great Britain takes more than half. Sugar is the next most important item. The amount exported varied in annual value in the period 1884-1905 from $2,000,000 to $3,000,000. Other exports are beans, onions, eggs, wheat, rice and other grains.

The imports include cotton goods and other textiles, coal, iron and steel, timber and tobacco, machinery, flour, petroleum, coffee, and live animals.

TURKEY

The Turkish or Ottoman Empire comprises Turkey in Europe and Turkey in Asia. Other regions are nominally under the Sultan's suzerainty. Until the time that Turkey entered into the present war, Egypt was among the number.

The population of the Empire was given in 1910 as over 36,000,000. In the provinces directly under Turkish government there were at that time 26,000,000. The Turks are estimated to number some 10 millions, of whom 1½ millions are in Europe. Other races represented are Arabs, Jews, Syrians, Slavs, Greeks, Albanians and Kurds.

The mainstay of the Ottoman dynasty is the Asiatic portion of the Empire, where the Mohammedan religion is absolutely predominant. In Asia Minor

the naturally vigorous and robust Turkish race forms a compact mass of many millions.

The leading items of import are, sugar, rice, flour, American cloth, cotton thread, cotton print, woollen fabric, coffee and petroleum. Total value of imports in 1909, $135,000,000.

The chief exports are barley, opium, grapes, figs, sheep and goat skins, carpets and silk. Total value of exports, 1909, $80,000,000.

SPAIN

Area, 191,893 square miles.

Population, 1911, 19,611,000.

Spain's area is about twice that of Great Britain. The war of 1898 with the United States reduced its colonial possessions to insignificance.

The lack of population is a notable fact. Spain occupies an extremely advantageous geographical position; its resources are rich, varied and to some extent unexploited, and its inhabitants are noted for their commercial enterprise or for their industry. Nevertheless, Spain is almost as thinly populated as the most deserted province in Ireland.

The interior of Spain is composed of a tableland of between two and three thousand feet elevation. The tableland is crossed and nearly surrounded by mountains. None of the rivers that traverse it are of much service for navigation, but some are of great value for irrigation, as in summer the country becomes a sunburnt dusty, wind-swept waste. The climate on the coast varies in different districts, from sub-tropical in the south, to the mild equable, rainy climate of the north and north-west coast provinces.

Only 6 per cent. of the area is in forest, but the cork oaks of the southern provinces are of immense value.

Agriculture, by far the most important industry, is in general in a backward condition. In some districts the implements are still of the rudest description. Except in the Atlantic provinces, irrigation is necessary for such crops as corn, vegetables and garden fruits. Grains, vines and olives are cultivated chiefly on dry soil. Wheat and barley are the chief cereals, and are general. Oats and rye are cultivated on the higher levels. Rice is largely grown in swampy sections. Grapes for winemaking come next in importance to cereals. There were over 3,000,000 acres in vineyard in 1908, and the production of wine is very large. In some districts there are forests of olives embracing hundreds of square miles. In 1908 the yield of oil amounted to over 36 million gallons. Oranges, lemons, figs, almonds and other fruits grow abundantly all around the Mediterranean coast. Sugar cane and sugar beets are grown in some districts, the output of the sugar factories in 1901 being 100,000 tons of sugar.

Live stock has declined for many years. The Merino sheep were once a source of immense revenue, but their numbers have been greatly reduced and have been replaced by coarse-woolled breeds. In some districts goats are grazed in very large herds. Goats' milk and cheese are important articles of diet. Dairying is an industry of the northern provinces, where also cattle are raised for field labor.

The tunny, sardine and anchovy fisheries give employment to large numbers of fishermen and others. In 1910 there were 400 sardine curing establishments.

Minerals

In the production of copper and lead ores and mercury, Spain heads the list of European countries. Silver, iron and salt are mined, and the undeveloped mineral resources, including coal, are great.

Commerce and Industry

With a highly protected home market an abundance of water power, cheap labor, and varied resources, Spain has room for much industrial development. But native capitalists as a class are unduly conservative, and much of the capital invested has come from other countries. The principal manufacture is that of cotton, but the output does not

supply the home market. Other industries are linen, paper, silk, leather, soap, chocolate, sugar, salt, cork and tobacco. The paper, sugar, salt, petroleum and metallurgical industries are to a considerable extent in the hands of trusts.

The imports in 1905 were valued at about $160,000,000, and the exports at $250,000,000. In 1900, exports were less than $145,000,000.

The imports include grain, dried fish and other foods, live stock and animal products, machinery, vehicles and ships, glass and pottery, drugs and chemicals, textiles and raw cotton. The exports include metals and minerals, wine, sugar, fruit and other food articles, cotton goods, animals, wool, hair and timber.

Great Britain, France, United States, and Germany in the order named, take the bulk of the exports, and Great Britain, France, Cuba, and Germany supply most of the imports.

THE EMPIRE OF INDIA

Area, 1,097,901 square miles.

Population, 315,086,000 (total Indian).

The term "British India" denotes all the territories under the British Crown governed by the Viceroy. They comprise 61.9 per cent of the whole of India, and nearly 79 per cent. of the population.

India includes both British India and the Territories of the native princes. The latter are under the suzerainty of the King-Emperor. They are governed as a rule with the help of a political officer appointed by the British Government and residing at their courts. They have an aggregate area of 675,267 square miles, or 38.1 per cent. of the total.

Agriculture

Near y 200,000,000 of the people are engaged in agricultural pursuits. The prosperity of agriculture is therefore of overwhelming importance. All other industries are subsidiary to this main occupation. This excessive dependence on a single industry, which is in its turn dependent on the accident of the seasons—a favorable or unfavorable monsoon—is one of the main causes of the frequent famines which ravage India.

The total area under cultivation is 253,432,000 acres, divided as follows:

Wheat, rice and food crops	195,097,500	acres
Cotton	14,568,200	"
Tea	543,350	"
Coffee	94,576	"

Of recent years, wheat has become the most important crop, more especially for export. The irrigation canals of the Punjab have turned northern India into a great grain field of 8½ million acres. The total area in wheat in 1912 was 29,569,000 acres.

In 1904 India took the first place in supplying wheat to the United Kingdom, sending nearly 25½ million cwts. In 1905 it fell back into third place, being passed by Russia and Argentina.

In 1905 the export of rice was valued at nearly $60,000,000. This in normal years goes either to Europe or to the Far East.

Other important crops are millet, oil-seeds and sugar. The refuse or cake from pressing oil seeds forms an important cattle food. The total value of the oils and oil-seed exported in 1905-06 was over $35,000,000.

Textiles, Minerals and Metals

These industries give employment to nearly 20 millions.

The value of the coal produced in 1910-11	$11,950,300
The value of the gold produced in 1910-11	12,170,000

The value of the commerce of India in 1912-13 was:

Imports	$700,292,975
Exports	794,421,605

Canadian Trade

	Imports from	Exports to
1911-12	$7,960	$2,814,000
1912-13	8,827	4,169,000

ISLAND OF CEYLON

Area, 25,332 square miles.

Population 4,106,350. Europeans about 12,000.

The principal industry is the cultivation of tea and rubber. In 1912, 192,020,000 lbs. of tea were exported.

Rice is grown on	680,500	acres
Cocoanuts on	943,000	"
Tobacco on	16,250	"

Total trade in 1912:

Exports	$63,665,500
Imports	57,240,000

THE ARGENTINE

Area, 1,083,596 square miles.

Population, 1910, 7,171,910.

Length from north to south, 2,285 miles; greatest width, 930 miles. In population, the Argentine ranks second among the republics of South America. Geographically, there are three main divisions of the country—(1) the mountainous zone and the tablelands of the West; (2) the great plains of the East; and (3) the desolate, arid steppes of Patagonia in the South.

Agriculture

Cultivated Area:

1872	1,433,000	acres
1888	6,077,000	"
1895	12,088,000	"
1912	56,804,000	"

Area under various crops:

1914-15

Wheat	15,481,000	acres
Corn (1913-14)	9,464,000	"
Flax	4,263,000	"
Oats	2,822,000	"

The average yield of wheat is about 12 bushels per acre.

In 1878, the production of wheat was insufficient for home consumption, and the amount of corn barely met requirements.

The exports of wheat were in 1912, 96,601,000 bushels and in 1913, 102,632,000; of corn in 1912, 190,355,000 bushels and in 1913, 184,632,000 bushels.

In 1901 the production of sugar was 151,639 tons, of which 58,000 tons were exported. There were 51 sugar mills in operation. The sugar crop of 1914-15 was 200,000 tons.

The development of the live-stock industry has been remarkable. The figures are as follows:

	1878	1899	1912
	No.	No.	No.
Cattle	12,000,000	25,000,000	29,120,000
Sheep	65,000,000	89,000,000	83,546,000
Goats	.....	.....	9,000,000
Horses	4,000,000	4,500,000	.....

Originally the cattle were nearly all of the long-horned Spanish breed, and of little value for their meat. Gradually, Shorthorns, Herefords, and other breeds were introduced with highly satisfactory results. Holsteins and Jerseys also were imported in the interest of the dairy industry.

In 1898 the only market available for live stock was in the local slaughtering establishments. In 1899 the first shipment of cattle (1930 steers) was made to England. This was not very satisfactory, owing mainly to the poor class of animals. However, the exporters persevered, and the export of cattle grew in value and importance. In 1898 the number had grown to 359,000. The outbreaks of foot-and-mouth disease in 1901 and 1906 led to the exportation of live cattle being prohibited. This has led to an enormous dead-meat trade being built up. In 1913, out of 23,000,000 cwt. of meats imported by Great Britain, nearly 9,000,000 cwt. came from the Argentine, about six-sevenths being beef and one-seventh mutton.

The development of sheep farming has also been very marked. In 1878, 65,000,000 sheep yielded 230,000,000 lbs. of wool, or an average of 3½ pounds per sheep. In 1899-1900 the wool exports weighed 420,000,000 lbs., an average of nearly 5 lbs. per sheep.

PART IV.

THE LIVE STOCK SITUATION

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The element of uncertainty which characterizes the live stock business suggests the need of a review of the whole situation. During November and December the prices paid for cattle and hogs have been relatively low. On the other hand grain is scarce and dear. A decided impetus to grain production has been given by the war and the demand for grain next year is likely to considerably exceed the supply. The returns from the sale of grain appear to be safely guaranteed while the profit from feeding 70 cent corn to 6 cent hogs is seriously questioned.

That prices for live stock have been disappointing this fall cannot be gainsaid. The policy of the farmer, east and west, with respect to next year's operations appears to have been already decided—and decided in the light of these facts. "To sell off their live stock and to market their grain is a thing which farmers seem determined to do." Is this wise? Will it pay? The problem resolves itself into a study of present supplies and present prospects in relation not only to this country's needs but as well to the opportunities for foreign trade which the demand from other countries may be expected to create.

With respect to present supplies tables are appended in which are given statistics with respect to the census of cattle, sheep and swine for the years 1901, 1911, 1912, 1913 and 1914. The figures for 1901 and 1911 represent the actual decennial census returns and therefore may be accepted as reliable. The relative increase or decrease covering this period is indicated in the following table.

Percentage Increase of Animal Population from 1901 to 1911

	Cattle	Sheep	Swine
Canada	17.1	—15.3	53.3
P.E.I.	6.7	—37.5	17.4
New Brunswick.	—2.2	—15.9	68.8
Nova Scotia	—9.09	—29.1	39.4
Quebec	7.01	— 2.7	96.2
Ontario	.6	—40.7	19.2
Manitoba	24.3	26.6	49.07
Saskatchewan, Alberta	216.8	61.8	608.6
B.C.	11.3	17.7	—23.2

Note: The sign minus (—) denotes a decrease.

1911 to 1914.—The figures for the years subsequent to 1911 are estimates only, based upon correspondents' reports, and are not to be considered as strictly accurate. It is significant, however, that comparing the returns given for 1914 with those for 1911, increases are recorded in the case of cattle for the provinces of Saskatchewan and Alberta only, of sheep for the four Western provinces only, and of swine for the provinces of Saskatchewan, Alberta and British Columbia only. As regards the aggregate for Canada, there has been a decrease in all three classes of live stock, that for cattle being practically half a million head.

A study of the census of the human population reveals the fact that our cattle supplies, taking cattle as representative of our meat producing animals, have not increased as rapidly as our demand for beef. In ten years the population of Canada increased 34.1 per cent. while the cattle population increased only 17.1 per cent. Moreover, the urban population, which may be looked upon as essentially the consuming element

increased in 10 years by 62.2 per cent., while the rural population, or the producing element, increased by only 17.2 per cent. It is a significant fact that the ratio between our rural population and our cattle population remained constant, an increase in each case of approximately 17 per cent. In 1901 and again in 1911 the number of cattle per capita rural population was 1.66. The number of cattle per total population, however, was, in 1911, .90 as compared with 1.03 in 1901. To make the ratio per total population for 1911 equivalent to that of 1901 would require 907,547 additional cattle or more than five times as many as were exported in 1901, our exports for that year being 169,297. That during the last few years the consumer has felt the effect of the operation of the laws of supply and demand is evident.

As throwing further light upon available supplies, a table is introduced here, in which are set forth the receipts of live stock at the three leading Canadian markets for the years 1910-1914 inclusive:

Perhaps the most outstanding feature revealed by this table is the unprecedentedly large marketing of hogs in 1914. Eastern Canada furnishes no surprises, Toronto receipts representing only a gradual and normal increase since 1910, such being caused undoubtedly by the high prices which have prevailed during the intervening period. Montreal receipts on the other hand are practically stationary. Eastern feeders have evidently become wary in their breeding operations and are not easily to be stampeded into unwarranted production. Western Canada however provides the surprising feature of the situation. Winnipeg hog receipts for 11 months in 1914 are practically six times greater than those recorded for 1911, the census year, and nearly three times greater than those of 1913. The returns for Alberta, which should include the Calgary Stock Yards receipts and the hogs sold to the Calgary and Edmonton packing houses are not available through regular channels, but it will be sufficient to say that some authorities

Canadian Live Stock Markets

Receipts

	1910	1911	1912	1913	1914 (11 mths.)
Toronto					
Cattle	319,685	293,328	273,247	365,936	249,351
Sheep	190,542	227,903	200,216	206,044	178,291
Hogs	212,787	255,102	327,501	346,956	416,257
Calves	35,778	35,133	44,137	53,707	44,419
Montreal					
Cattle	160,981	155,547	136,715	182,699	129,060
Sheep	98,023	117,779	142,342	143,341	124,555
Hogs	133,603	189,370	200,888	190,084	169,533
Calves	72,364	72,930	84,755	108,832	80,275
Winnipeg					
Cattle	190,517	102,726	101,044	96,478	117,467
Sheep	30,775	43,614	64,041	54,585	42,426
Hogs	91,626	85,157	110,781	163,303	474,685
Calves	.....	.....	.....	.....	.....
The Three Markets					
Cattle	671,183	551,601	511,006	645,113	495,878
Sheep	319,340	389,296	406,599	403,970	345,272
Hogs	438,016	529,629	639,170	700,343	1,060,475
Calves	108,142	108,063	128,892	162,539	124,694

have estimated that Alberta last year produced 1,000,000 hogs.

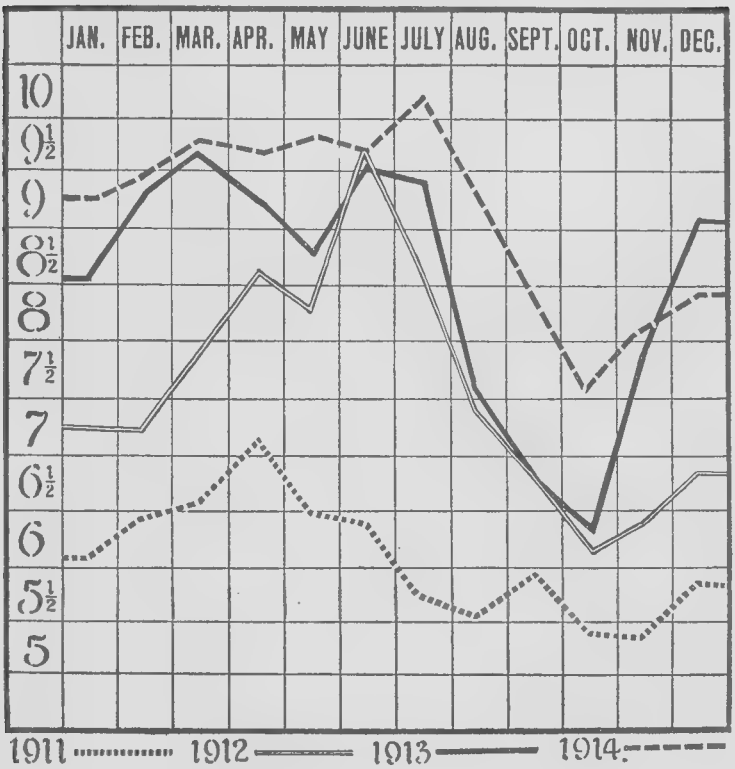
The record of the past twelve months strikingly illustrates the capacity of the west in the direction of live-stock development. That, for various reasons, the season's operations have resulted in a disappointment to the producer is particularly unfortunate. In the first place the extension of the industry was so abnormal that markets could only imperfectly adjust themselves to the unexpectedly large receipts. In the second place a large portion of the hog producing area was this year faced with a serious crop failure. The shortness of feed together with the sharp rise in the price of grain following the outbreak of the war forced very large numbers of unfinished and immature pigs on the market. As a result, particularly for this class of stock, prices dropped to a comparatively low level. The result was a demoralization of the whole industry.

The bearing of trade conditions upon this situation is discussed later on, and the conclusion is reached that a panicky or pessimistic view as regards next year's markets is not well founded. It will be unfortunate, therefore, should last year's experience react against the maintenance of a wise, sane attitude respecting the future of the industry. A wholesale abandonment of swine breeding would be as unwise as this year's extraordinary production was ill-timed. There is money in the hog business but the greatest and perhaps at times, the only success in the work will fall to the lot of those who are careful to preserve a well-balanced policy in relating the numbers maintained to the capacity of the farm for successful hog production, and above all to those who are prepared to remain at the business continuously from year to year.

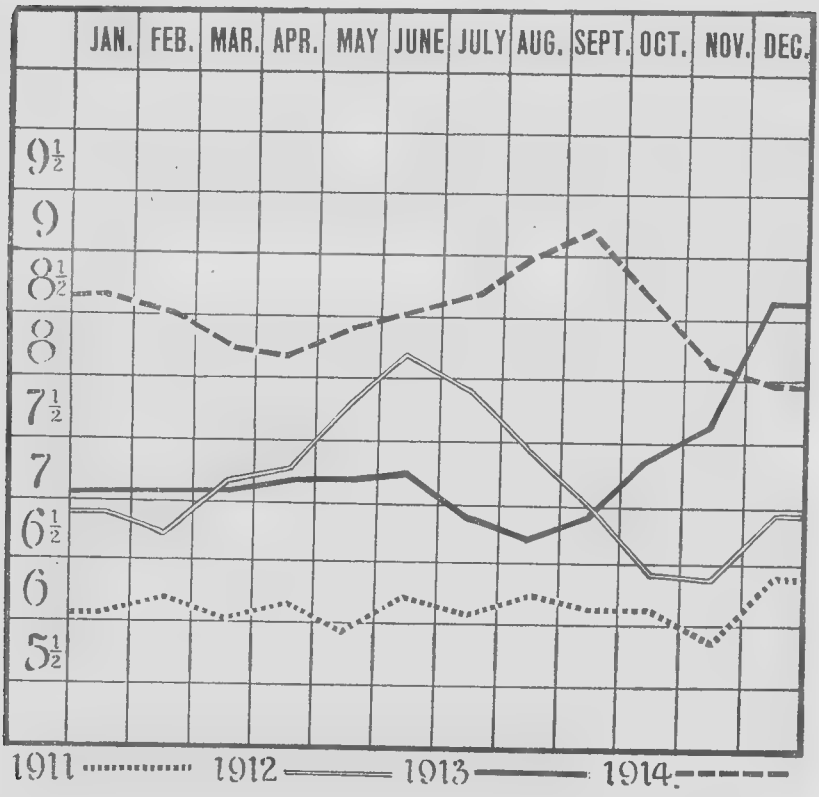
The receipts of sheep indicate little other than that there may have been a retraction rather than an extension in this industry. As regards the marketing of cattle, it is of significance to note that there has been a slight increase of receipts in Western Canada and, what is of much more importance, that the killings of calves have not appreciably been curtailed. Market receipts indicate that with respect to numbers the live-stock situation is practically stationary, except in the case of hogs, the production of which in Western Canada has greatly increased during the past year.

Turning from the consideration of receipts we pass to a study of the prices which have prevailed during the last four years. The following diagrams detail the history of market finance, illustrate the fluctuations which have occurred and the levels which have been reached during the period.

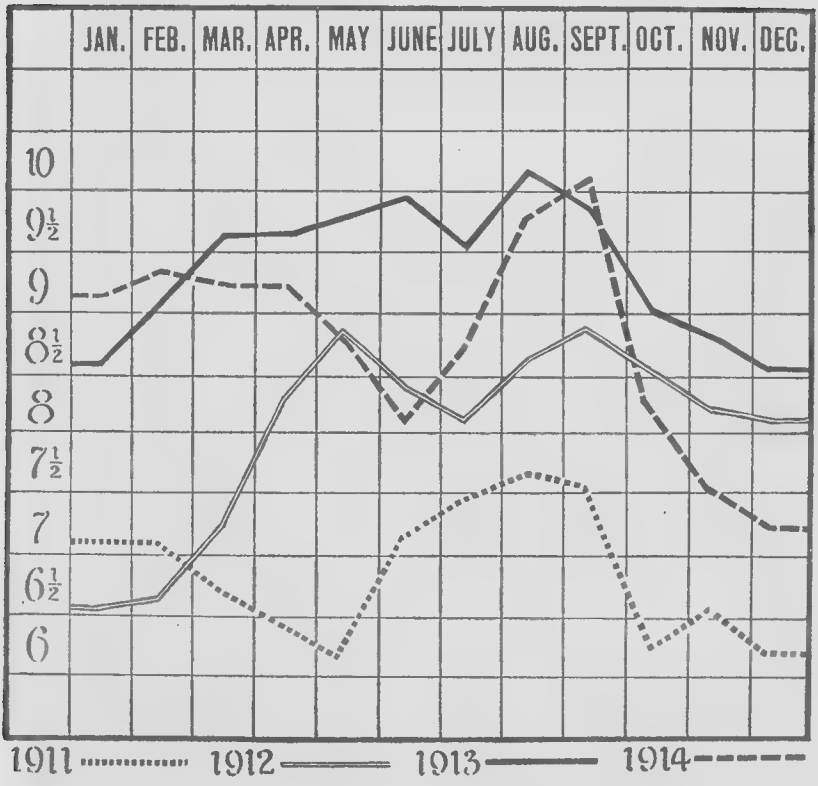
Average Market Prices—Lambs—Toronto



Average Market Prices—Butchers' Best—Toronto



Average Market Prices—Hogs—Toronto



While these diagrams detail the prices for one market only, they may be considered as reasonably representative of the Canadian trade. In the case of cattle and sheep, comparing similar periods of the different years with each other, the almost unvarying rise in price is to be noted. The deductions to be drawn are self-evident. In the case of lambs the remarkable slump in the fall months caused by heavy marketings is to be observed. The high prices in June and July are for spring lambs. The useful market for yearlings during January and February is significant and suggests the wisdom of winter feeding. Cattle prices make clear the demand that exists for really high class stock, an article that is all too scarce on the markets at the present time. In fact the level of price, high as it has been during 1914, has frequently been depressed by the absence of premium cattle. Baby beeves, 18 to 20 months of age which will dress out 500 to 600 lbs. of beef are preferred by the packers, can be handled to best advantage by the local butchers, and command, when finished, the highest prices.

The hog market presents a very irregular sheet, has evidently been subject to fluctation, and appears to bear the aspect of uncertainty. It is clear, however, that prices have been, for a considerable period, abnormally high, perhaps too high to continue. That they still remain profitable is not to be questioned. It is suggested elsewhere that they have already steadied down to a practical business level and the bracing of trade conditions upon the future of the market, as discussed later on, merits the most careful consideration.

In summary of the situation, three statements may be made:

1. Sheep prices if they indicate anything at all, make it clear that the Canadian consumer has developed a taste for home-grown lamb, that the demand has created a very firm market for such stuff as has been offered, and that the supply is well short of what the trade can profitably handle.

2. The prices of hogs have stiffened since the slump which occurred in the fall, and in reference thereto the packers declare that the minimum has been reached, that there is every prospect that the market will take on a firmer tone for some months to come, and admit that present prices permit of the exportation of hams and bacon to Great Britain, enabling them to meet Danish competition with a fair return to themselves.

3. On good authority it is stated that at the present time, as regards prices, Toronto is one of the best cattle markets in the world.

Outlook for 1915

Respecting the outlook for next year's supplies no better light can be thrown upon the existing situation than by quoting from communications received during the last month from prominent stockmen in the different provinces of the Dominion. Prior to giving these, a few comments by way of introduction may be made. Regarding the sheep industry, there is nothing to indicate that there is any likelihood of either a decided increase or decrease in production in the next twelve months. It is doubtful, however, in view of the shortness of feed in the ranching areas of Alberta and Saskatchewan, if sheep raising will be able to hold its own, breeding operations on this account having in some measure been curtailed. Respecting hog production there will be a decided decline in the output. In Eastern Canada, while many young sows and much brood stock has found its way to market it is probable that the supply will be reasonably well maintained. In Western Canada, following the severe liquidation in breeding stock, it is estimated that the output this fall will not exceed 60 per cent. of this year's marketings. The beef cattle industry in Eastern Canada has not of late years made substantial progress. The quality of the cattle marketed, speaking generally, has been affected by an extension of the dairy industry and by the introduction into beef-raising sections of dairy sires. Latterly, however, the steadily rising value of beef stock has created a greatly increased demand for beef bred bulls, and in consequence a firmer tone is developing throughout Ontario and the other Eastern provinces. Much of what Western Can-

ada produces is good marketable material. The prospects as regards next year's production may be gleaned from the quotations from letters which follow.

Correspondents' Comments upon the Live-Stock Situation in Canada.

British Columbia

Beef is high and there is a great deal of confidence shown among the beef men.

Dairying conditions are very good, though the products are slightly cheaper than they were a year ago.

The importation of New Zealand butter is having a bad effect on butter making.

The sheep industry is holding its own but not making a great deal of progress.

We still import about 70,000 live sheep for mutton purposes from the State of Washington.

The hog business has been good and there is generally a brisk demand and good prices.

More feed stuffs should be produced at home and fewer feed merchants would fatten at the expense of the farmer.

Alberta

Farmers are regarding with dissatisfaction the feeding of fifty cent oats to five cent hogs, and I look for a wholesale dropping of the hog business by a great number of those who have gone into it, encouraged by the low price of grain and the high price of meat during the last two or three years.

Because of the high price of grain very few cattle are likely to be fed in Alberta this year.

One drover told me not one-fifth of the cattle would be fed in his district in comparison with last year.

The uncertain prices of the market have led dealers in hogs and sheep to work on a wider margin than is usual.

Dollar wheat right from the thresher is a great temptation to get away from the week in and week out labours connected with mixed farming and its rather slow returns.

Practically all the farmers in this section of Alberta are homesteaders with small capital. Many are just getting nicely into mixed farming with a few head of beef or dairy cattle and hogs. Since the grain prices have advanced, too many of these men are selling off their hogs, and in some cases their cattle, with a view to more extensive grain growing.

This district will be as bare of hogs next year as they say "Job's turkey was of plumage."

Feed is short here but ranchers seem to think they can rough through on straw.

Stock cattle have never been as high as at present and all are on the buy.

The sheep business looks especially good, as the prospective price for wool and the increase in the price of mutton is having an effect on the demand from the farmers for small bunches.

Manitoba

I am sorry to find the most of farmers going out of pigs.

I find a great many farmers going in for dairying that did not keep cows a few years ago. It keeps them in cash.

Beef will be scarce and high in the Spring but most of the farmers are keeping more cattle every year.

It seems a pity that so much young immature stock is being killed at the present time.

I do not think there will be nearly as many beef cattle fed this winter as usual, owing to a shortage in rough grain and the high price of same.

A large number of people are unloading their breeding hogs.

Western Canada

1915 will see considerably less than half the number of hogs produced in Alberta last year.

The report from Saskatchewan is along very similar lines.

Manitoba has been producing very choice bacon hogs, but the breeders stated that they were losing money and intended to get rid of them.

The cattle situation is not quite as desperate but it is quite as bad. The very outside price for top steers in Winnipeg being six cents.

There has been a enormous sale of young heifers and young cows and the country is being very greatly denuded of breeding stock.

Ontario

Many calves are raised. Of late very few are vealed.

Our cattle are not quite as well bred as they were some years ago. The sires now being used are not of quite as good quality as they were. The young stock are showing a marked deterioration.

The number of young cattle for sale next year will be about the average, as nearly all the calves are raised and winter feed is quite abundant.

Sows have been very prolific. The pigs are healthy and strong but there is no sale for weaned pigs.

The periodical rush to get out of hog production is again beginning to prevail. The ebb and flow of pork production has been the bane of the business in Ontario. The fluctuations of the live hog market are beyond the knowledge and ken of the wisest to forecast. During the past fifteen years it has been as variable as a weather barometer.

There will be a serious shortage in the output of hogs in the fall of 1915.

As the years pass there is a continuous decrease in wool and mutton production.

A few farmers who are staying with the sheep tell me that their easiest money comes from the sale of wool and lambs.

Many farmers are keeping more milch cows than formerly, and aim to finish their young beefing animals at as early an age as possible.

The number of feeding animals put in the stable will not nearly approach that of former years in this locality.

In spite of the present slump in fat cattle prices, we look forward to high prices for good beef animals in the spring.

In the sheep industry not much advancement is being made.

We are getting much advice at present regarding the necessity of a larger grain production but the great endeavour of Ontario and Canadian farmers should be to use their larger area of production in making the live-stock industry more prominent than ever, as it is only in that way we can continue to properly feed the soil that it in return may sufficiently increase the beneficent return to the tiller.

Quebec

There are about 15 per cent. less dairy cattle in this district as compared with 1913, but among them we have a lesser number of old cows, a large number having been sold as canners during the past year.

The prices of milch cows average about twelve to fifteen dollars per head less than last year. This is largely owing to the light hay crop and to the high prices of mill feeds. About 12 per cent. of the winter dairymen are selling out or drying off their cows, owing to these causes.

Because of the financial stringency the supply of young breeding stock has accumulated and is in excess of the demand. This applies particularly to males. These conditions are only temporary, and with the loosening of and a more free circulation of money I look forward to great activity in breeding centres. This will not likely come until next spring.

Our farmers should breed and raise all the good young heifers, as good prices will be realized for them in the near future.

MARITIME PROVINCES

The last few years the farmers in this section (New Brunswick) seem to drop out of cattle and go into potatoes, but they seem to be getting back to the cattle again.

Sheep and lamb are in great demand both for local trade, American trade and Western Canada trade.

It seems a shame when people are willing to raise the stock that they do not improve their breed.

Hogs are short in New Brunswick on account of the potato business.

The men who are picking up stockers in Nova Scotia for feeding are having a pretty hard time.

Most feeders in Prince Edward Island have at least as many as usual and there has been a big demand for breeding stock.

The sheep industry seems to be on the up grade again.

The price of feed in Prince Edward Island is normal and pigs will not be sacrificed.

Interprovincial Trade in Meats

	Bacon and Pork	Beef	Mutton	Miscellaneous	TOTAL
ONTARIO AND QUEBEC TO MARITIME PROVINCES					
July and Oct., 1912 ...	394,054	253,387	.....	1,954,613	2,602,054
Nov. and Dec., 1912 ...	263,439	360,078	.....	1,645,881	2,269,398
Jan. and Feb., 1913 ...	82,277	208,474	.....	897,374	1,188,125
Sept. and Oct., 1914 ...	878,560	184,501	220	963,647	2,026,928
MARITIME PROVINCES TO QUEBEC, ONTARIO AND MANITOBA					
July and Oct., 1912....	566,859 lbs. meat.				
PRAIRIE PROVINCES TO ONTARIO AND QUEBEC					
Sept. and Oct., 1914...	509,102	201,879	7,464	155,834	874,279
PRAIRIE PROVINCES TO BRITISH COLUMBIA					
Jan. and Feb., 1913 ...	56,154	288,000	4,726	2,818	351,698
Sept. and Oct., 1914...	2,197,858	688,125	21,680	301,429	3,209,092
ONTARIO AND QUEBEC TO PRAIRIE PROVINCES					
Jan. and Feb., 1913 ...	25,469	79,018	.....	62,266	166,753
Sept. and Oct., 1914...	32,237	.....	.....	263,930	296,167
MANITOBA TO SASKATCHEWAN					
Jan. and Feb., 1913 ...	157,520 lbs. meat.				
Sept. and Oct., 1914...	562,953 " "				
ONTARIO AND QUEBEC TO BRITISH COLUMBIA					
Jan. and Feb., 1913....	25,306	725,010	2,290	96,459	849,065

In commenting on the foregoing table the following facts are to be noted.

1. British Columbia is furnishing an important market for Alberta meats, Saskatchewan being interested in this market to a lesser degree.

2. The Prairie Provinces have now practically ceased to import from the East and are exporting to Ontario and Quebec at the rate of over 400,000 lbs. per month.

3. The Maritime Provinces continue to draw upon Ontario and Quebec for a regular supply. A considerable quantity of this output goes to Sydney, Sydney Mines and North Sydney in Cape Breton.

4. Studies of current wholesale and retail prices, from returns not here given, fully corroborate the prevailing opinion that meat prices are uniformly high throughout Canada. The householders' experience may be called upon to attest this statement. It is to be noted, therefore, that while interprovincial shipments of meat are carried on there does not exist in any one place such a surplus as is able appreciably to affect or depreciate local market prices.

The Import Trade

Western Canada continues to import largely of live sheep and of frozen mutton and lamb. During the first 10 months of the year 1914 the imports into Canada totalled 112,838 sheep and 4,015,152 lbs. mutton and lamb. Of all the provinces British Columbia is the largest importer, but the other Western Provinces take their share. The imports into Eastern Canada are insignificant. The situation represented by the statistics given, it must be regretfully admitted, appears to have become a permanent feature of our Canadian Meat Trade. In this connection, it is to be remembered that Canada was at one time a large exporter of sheep, as many as 130,817 head having been exported to the United States alone during the twelve months prior to March 31, 1907.

The imports of hog products for the first ten months of 1914 amount to 57,575 lbs. of fresh, chilled and frozen pork and 8,240,310 lbs. of pork barrelled in brine. Inasmuch, however, as these imports are offset by much larger exports of the same commodities, it will be clear that this feature of the trade has no particular significance as regards the status of our hog industry.

The same statement may be made regarding our imports of beef. During the first ten months of the year there were imported 1,643,728 lbs of fresh, chilled and frozen beef and 996,837 lbs. of beef salted in barrels. This importation is fully offset by our exports and again may be considered as only an incident in our trade. Our imports of live cattle consist of pure bred stock for breeding purposes.

Our Export Trade

Our sheep exports amount only to the insignificant item of 18,233 sheep and 647,367 lbs. mutton and lamb. To this movement, in view of the shortage in our country, no importance can be attached.

On the other hand, our hog exports are assuming considerable proportions. A Seattle firm bought largely in Calgary this year and these purchases together with the numbers forwarded from the Winnipeg Stock Yards to Chicago and other U.S. points constitute the large proportion of the 153,219 hogs exported from Canada to October 31st during the current year. The export of live hogs is not particularly to be encouraged under normal conditions, and cannot yet be considered as having established itself as a permanent feature of our business policy. Of more vital and far-reaching importance is the trade in hams and bacon which is now being developed with Great Britain and to a lesser extent with the Eastern United States. Our exports for the ten months period amount to 19,526,384 lbs. As noted previously, packers now state that with a price of seven cent hogs to farmers they can successfully compete with Denmark in the British market. Our exports to Britain are now increasing rapidly month by month.

Of cattle 129,166 have been exported during the ten months period. From the West the movement has been largely to Chicago and from the East to Buffalo and New York. This trade is intermittent, inasmuch as Canadian prices occasionally exceed those ruling in the United States

markets. A promising and profitable business is now being developed in the exportation of dressed beef to the Eastern United States. In all to October 31st, 11,538,201 lbs. have been exported. Only a part of this consists of tinned product forwarded to Great Britain for army supply, this movement having developed its present proportions only during the last three months. There is every reason to believe that the trade developments following the opening of this huge American market will shortly assume important and satisfactory proportions.

What Trade Conditions Indicate

Sheep. A review of the existing situation calls attention to a falling census, to the highest prices that have prevailed in years, to steady domestic consumption, to a large importation necessitated by local demand, to the absence of an export trade and to the rising price of wool. These features of the industry support the argument for production in such fashion that a further statement is not required. Practical men state that sheep can now be made to yield a return of 100 per cent. The last London auctions report an increase of 10 per cent. in the prices realized for cross-bred and medium grades of wool. The army demand is inducing the woollen mills to work at full capacity. We have never had in Canada a more assured outlook or more attractive prospects as regards the revenue to be derived from sheep than exist at the present time.

Hogs. The opinion expressed by packers that hog prices have reached the lowest level and that they may be expected to rule a trifle firmer for a considerable period is based upon the following facts—Danish and Dutch killings have been very heavy of late and much small stuff and breeding stock has been marketed. This year's supplies are likely to be greatly restricted. In fact, the latest advices from Holland indicate that the prohibition of the exportation of cured pork is expected. Pigs now being sold are of all different weights, showing that the country is nearly at the end of its stock and farmers are selling all they have on hand, the food being too dear. This situation has been brought about owing, amongst other things, to the discontinuance of the supply of Russian barley for feeding purposes and to a fear respecting the situation which the war may develop. Moreover, at present prices Canada can profitably land her products in Britain in the face of keen competition. The bacon market is being steadied and maintained at a high level by enormous purchases for the army. Bacon apparently fills the requirements of the Commissariat and the demand therefor is expected to continue.

The packer's attitude is determined by a business interpretation of present conditions. Further, the United States is reported to be short during ten months of the past year at its leading markets 1,894,939 head of its normal hog supply. The Western States have purchased our live hogs and the Eastern markets our dressed products at satisfactory prices, and this trade is likely to be extended. On the other hand, we are faced with declining production, as is indicated by the reports from correspondents previously quoted. It would appear to be good reasoning, therefore, to state that he who stays with the hog business this year will reap his reward.

Cattle. Packers are not sanguine regarding the possibility of developing a beef trade with Great Britain or other European countries. Perhaps the last word has not been said in this direction, but it is the opinion that European stocks must be very materially depleted and Australasian and South American shipments greatly curtailed before prices would allow of Canadian meats being placed on British markets at a profit. Certainly tinned goods are being shipped in quantity at the present time, but this movement is not relevant to the discussion, except that it is to be regarded with favor in that it rids the country of useless stock. Of course, as a result of the war, necessity may require the purchase of better meat when the canned supply is exhausted. Such a situation, however, cannot be regarded as providing a permanently profitable outlet for the Canadian product.

Present tendencies in the world's markets may possibly have quite another

effect than what is currently expected. Were supplies in the great producing and consuming countries over-abundant, the Argentine and Australia would have to turn to the United States for an outlet. Such a development, at least on an extended scale, is not now probable. These countries will have more than they can do to take care of their British trade. This being the case, the situation in the United States suggests Canada's national opportunity. The six principal Western American markets during the first ten months of this year recorded a decrease of 746,045 head as compared with the corresponding period in 1913. It was estimated that in January, 1914, as compared with the census of 1910, cattle had decreased 8,536,000 head or 19.2 per cent. During that period the population had increased from 91,972,999 to 98,646,000. It is further estimated that for this period the United States is short nine beef cattle, seven sheep and more than three hogs for each 100 people of its population. As regards value, it is stated that all stock on January 1, 1914, notwithstanding the decrease, was worth $395,487,000 more than the total value of the stock found on farms in 1910. Clearly then, as in Canada, the consuming population in the United States is increasing steadily, while its meat supply is appreciably declining. The interpretation of this situation is not far to seek. Canada's export market lies with the 30 or 40 million people of the Eastern States. It is already being developed. That it promises a lucrative field for Canadian enterprise need not here be further discussed.

Poultry. While no previous reference has been made to Poultry, the following paragraphs should be of interest.

As regards this industry it may be said that, in recent years, the two most outstanding features are the enormous increase in consumption and the resultant high prices prevailing for both poultry and eggs.

Although production has greatly increased, in fact more than doubled, in the decade between 1901 and 1911, it has not kept pace with the demand, and in the ten years Canada changed from an exporting country, exporting in 1901, 11,363,064 dozen eggs, to an importing country, importing in the fiscal year 1911-12, 7,577,826 dozen.

While the increase in production has been general throughout Canada, it has been most marked in the middle western provinces, where last year, for the first time, production was almost equal to the demand. Some districts, in fact, showed a small surplus.

The extent to which the Poultry Industry may be developed in the Middle Western Provinces is almost unlimited, and the phenomenal development of the last few years is bound to continue for a short time at least. The only immediate consideration that is likely to check its progress is the lack of facilities for advantageous marketing.

Home demand is practically satisfied. British Columbia will undoubtedly continue to require a considerable quantity of both eggs and poultry, the Northern Pacific States possibly some poultry but no eggs. The logical outlet for the surplus lies in the Eastern Canadian and Eastern American markets via Canadian channels.

Conclusion

Appended at the end of this article, a table will be found in which are presented statistics of live-stock, covering a period of several years, for the countries whose live-stock production is of most direct interest to Canada. A careful study of this table will serve to throw considerable light not only upon various deductions arrived at in the course of this paper, but as well upon the wider and more general situation relating to the world's food supply. This latter consideration must, in fact, ballast the whole argument brought forward in determining our national policy respecting the direction and development of our live-stock industry. It is hoped that sufficient proof has been offered to demonstrate the argument for increased production. The firm tone of our local markets and of such foreign markets as are of immediate interest to the country, together with an admitted shortage in the world's meats, clearly suggest the conclusion that Canadian enterprise should strengthen its hand in an extension of its home and foreign

trade. The increased acreage under grain, which is now assured, will render available immense quantities of rough fodder and much surplus feed. To utilize this without waste, and to the greatest possible advantage, is an obligation resting this year upon every owner of land. The capacities and resources of this country, always constituting a safeguard of the Empire's prosperity must this year be taxed to meet the Empire's needs. No great industry is suffering less, is feeling less the burden of the war, than is agriculture, and a short-sighted, ungenerous policy on the part of the Canadian farmer must be regarded as a reflection upon his citizenship and upon the faith and patriotism of our rural people toward the duty of this Dominion and the future of the Empire. The opportunity now presented to Canadian Agriculture is not only of commercial significance, involving a wide development of our own resources and the permanent establishment of an extensive export trade, but it rests, as well, a challenge to the good sense and an obligation upon the loyalty of the people upon the land.

Cattle in Canada

	1914	1913	1912	1911	1901
Canada	6,036,817	6,656,121	6,431,861	6,533,436	5,576,451
N.S.	276,506	284,194	286,155	287,424	316,174
P.E.I.	108,365	112,826	114,103	120,396	112,779
N.B.	201,969	214,768	223,643	222,191	227,196
Quebec	1,359,434	1,455,356	1,451,676	1,450,994	1,365,869
Ontario	2,056,288	2,601,086	2,414,282	2,504,673	2,487,181
Manitoba	408,302	409,718	415,601	435,113	349,886
Sask.	679,060	663,098	646,140	633,612	.....
Alberta	812,100	779,293	745,229	649,850	.....
N.W.T.	.....	.....	.....	.....	591,739
B.C.	134,793	135,782	135,033	139,183	125,002

Sheep in Canada

Canada	2,058,045	2,128,531	2,082,381	2,175,302	2,510,239
N.S.	211,921	217,734	216,135	220,907	285,244
P.E.I.	85,351	85,660	87,793	91,232	125,446
N.B.	121,739	135,115	148,723	158,216	182,524
Quebec	571,287	602,751	620,881	637,062	654,503
Ontario	640,416	705,848	677,492	743,483	1,046,456
Manitoba	45,303	42,840	40,800	37,322	29,464
Sask.	126,027	115,568	114,810	114,216	.....
Alberta	211,001	178,015	135,075	133,592	.....
N.W.T.	.....	.....	.....	.....	153,152
B.C.	45,000	45,000	40,702	39,272	33,350

Swine in Canada

Canada	3,434,261	3,448,326	3,477,310	3,610,428	2,353,828
N.S.	53,892	56,580	61,194	63,322	45,405
N.B.	73,325	77,014	85,905	87,391	51,763
P.E.I.	41,718	43,762	50,463	56,377	48,007
Quebec	634,569	661,768	747,254	793,348	404,163
Ontario	1,553,624	1,652,440	1,693,594	1,864,165	1,562,696
Manitoba	186,276	184,745	183,370	188,416	126,459
Sask.	454,703	386,784	344,298	286,295	.....
Alberta	397,123	350,692	278,747	237,510	.....
N.W.T.	.....	.....	.....	.....	73,916
B.C.	39,031	34,541	32,485	33,604	41,419

NOTE—In these tables the figures for 1901 and 1911 are from the Census, those for 1912, 1913, 1914 are estimates based on the Census and reports of the correspondents of the Census and Statistics Branch.

Statistics of Live Stock

United Kingdom

Year	Cattle	Sheep	Swine
1905.....	11,674,019	29,076,777	3,601,659
1906.....	11,691,955	29,210,035	3,580,740
1907.....	11,630,142	30,011,833	3,967,163
1908.....	11,738,792	31,332,400	4,055,793
1909.....	11,761,830	31,839,799	3,543,331
1910.....	11,765,453	31,164,587	3,561,481
1911.....	11,866,111	30,479,807	4,250,013
1912.....	11,914,635	28,967,495	3,992,549
*1913 ...	11,936,600	.....	.....

Australia

Year	Cattle	Sheep	Swine
1905.....	8,525,025	74,403,704	1,014,853
1906.....	9,349,409	83,687,655	813,569
1907.....	10,179,730	87,650,263	754,101
*1908 ...	10,547,679	87,043,266	695,691
1909.....	11,040,391	91,676,281	765,137
1910.....	11,744,714	92,047,015	1,025,850
1911.....	11,828,954	93,003,521	1,110,721
1912.....	11,658,328	83,655,302	844,313

*Official Year Book, 1901–1912.

New Zealand

Year	Cattle	Sheep	Swine
1905.....	1,819,936	19,130,875	249,727
1906.....	1,851,750	20,108,471	242,273
1907.....	1,816,299	20,983,772	241,128
1908.....	*1,773,326	22,449,053	245,092
1909.....	.....	23,480,707	245,092
1910.....	.....	24,269,620	.....
1911.....	2,020,171	23,996,126	348,754
1912.....	.....	23,750,153	.....
1913.....	.....	*24,191,810	.....
1914.....	.....	.....	.....

*Official Year Book, 1913.

Where not otherwise stated statistics are taken from Board of Agriculture and Fisheries, 1908–1912.

Canada

Year	Cattle	Sheep	Swine
1905.....	.....	.....	.....
1906.....	.....	.....	.....
1907.....	7,131,816	2,783,219	3,445,282
1908.....	7,547,582	2,831,404	3,369,858
1909.....	7,234,085	2,705,390	2,912,509
1910.....	7,114,914	2,598,470	2,753,964
*1911 ...	6,533,436	2,175,302	3,610,428
*1912 ...	6,431,861	2,082,381	3,477,310
*1913 ...	6,656,121	2,128,531	3,448,326
*1914 ...	6,036,817	2,058,045	3,434,261

*Census and Statistics Monthly.

United States

Year	Cattle	Sheep	Swine
1905.....	61,241,907	45,170,423	47,320,511
1906.....	66,861,522	50,631,619	52,102,847
1907.....	72,533,996	53,240,282	54,794,439
1908.....	71,267,000	54,631,000	56,084,000
1909.....	71,099,000	56,084,000	54,147,000
1910.....	61,803,866	52,447,861	58,185,676
1911.....	60,502,000	53,633,000	65,620,000
1912.....	57,959,000	52,362,000	65,410,000
*1913 ...	56,527,000	51,482,000	61,178,000
*1914 ...	56,592,000	49,719,000	58,933,000

*Statesman Year Book, 1914.

Argentine

Year	Cattle	Sheep	Swine
1905.....	21,701,526	74,379,562	652,766
1906.....	.....	.....	.....
1907.....	.....	.....	.....
1908.....	29,116,625	67,211,754	1,403,591
1909.....	27,824,509	65,082,201	1,403,591
1910.....	28,827,900	73,012,640	.....
1911 ...	28,786,168	80,401,486	2,900,000
*1912 ...	29,400,000	.....	.....

*Britannica Year Book.

HORSES

C. M. MacRAE,
Live Stock Branch, Department of Agriculture, Ottawa

Number of horses in Canada (Approx.).....3,000,000

Distribution by Provinces:—

Prince Edward Island.....	36,000
Nova Scotia.....	63,000
New Brunswick.....	66,000
Quebec.....	372,000
Ontario.....	905,000
Manitoba.....	317,000
Saskatchewan.....	610,000
Alberta.....	520,000
British Columbia.....	61,000

(Given in round numbers)

N.B.—This does not include livery horses or horses held in Stock Yards.

*Horse Population of the World

British Empire—	*Number
Great Britain.....	2,150,000
Canada.....	3,000,000
Australia.....	2,400,000
British India.....	1,500,000
South Africa.....	700,000
New Zealand.....	400,000
Total.....	10,150,000
Allies—	
France.....	3,200,000
Russia.....	33,000,000
Belgium.....	260,000
Servia.....	150,000
Japan.....	1,500,000
Total.....	38,110,000

*Approximately correct. In round numbers.

Enemy—	Number.
Germany	4,500,000
Austria-Hungary	4,200,000
Total	8,700,000
Neutral States—	
United States	21,000,000
Argentine	8,900,000
Italy	900,000
Bulgaria	500,000
Other Countries	5,500,000
Total	36,800,000
World's Total	93,760,000

	Estimated Value of Horses on Farms June, 1911	Value of Horses Sold 1910
	Aver. Price per head	Aver. Price per head
Canada	$146.95	$146.72
British Columbia	136.44	158.56
Alberta	138.62	144.24
Saskatchewan	174.91	174.13
Manitoba	168.31	170.40
Ontario	139.79	147.23
Quebec	131.10	117.79
New Brunswick	123.64	116.64
Nova Scotia	115.78	115.95
P.E. Island	118.02	121.17

Estimated Value of Horses on Farms 1913

	Aver. Price per head	Total Value
Canada	$146.57	$420,079,250
British Columbia	136.00	8,230,448
Alberta	138.61	67,199,375
Saskatchewan	175.00	101,567,550
Manitoba	168.34	51,190,174
Ontario	138.64	125,140,346
Quebec	127.98	47,349,273
New Brunswick	121.75	7,926,290
Nova Scotia	115.16	7,203,258
P.E. Island	118.84	4,272,536

From Census and Statistics.

Estimated number of horses in Canada suitable for Cavalry and Artillery Purposes.

Distribution by Provinces—	
Maritime Provinces	1,500 to 2,000
Quebec	5,000 to 8,000
Ontario	10,000 to 12,000
Manitoba	3,000 to 4,000
Saskatchewan	5,000 to 7,000
Alberta	10,000 to 12,000
British Columbia	500 to 1,000
Total	35,000 to 46,000

British Army Remounts

Cavalry

Horses suitable for cavalry purposes may be described as follows:—

Age—5 to 9 years. (Buyers are very particular that a horse is fully 5 years old. On the other hand, a good horse even 11 or 12 years old, might be taken.

Height—15 to 15.3 hands.

Weight—950 to 1,250 pounds.

Description—Cavalry horses require to have a good length of neck, deep sloping shoulders, high withers, short back, strong loin, and muscular hind-quarters. The fore-legs must be placed squarely under the body and well forward. The fore-arm should be strongly muscled, knees strong, cannon bones clean and tendons well set back and strong, pasterns of fair length and sloping, and good feet. Hind legs should be properly placed, quarters strong, hocks cleanly cut and kept close together in action, cannon bones clean and tendons well set back and strong, pasterns of fair length and sloping; feet of medium size and of good quality. The legs should, comparatively speaking, be free from hair.

Action—Cavalry horses should stand with their legs placed squarely under them; in action, when walking, trotting, or galloping, they should be carried squarely forward, always in a line. Horses that paddle or roll in front or that go with their hocks wide apart are not suitable, as often the life of the rider depends upon the sure-footedness of his mount.

Cavalry horses must be thoroughly conditioned, broken to ride and quiet, otherwise they are unsuitable. For good specimens the maximum price is $175.00.

Artillery

Age—The ages required are the same as those given for cavalry horses.

Height—15 to 16 and even as high as 16.1 if the horse be clean-legged, possess good action, and is otherwise suitable.

Weight—1100 to 1300 pounds. (Occasionally a clean-legged horse possessing particularly good action and other required qualifications, weighing even a few pounds more might be taken.)

Description—The most desirable artillery horse is an animal commonly known to the trade as a heavy delivery or bus horse with comparatively speaking clean legs, although a little hair, if it be of fine quality, is not considered a disqualification. In conformation artillery horses should possess fair length of neck, sloping shoulders, with a fair height of wither, as they must carry a saddle as well as harness; short backs; well-sprung ribs; deep bodies; strong loins; and good hind-quarters; otherwise the description given for the cavalry horse as to the placing of the legs, action etc., will apply. It shall be understood, of course, that the artillery horse is much more strongly built throughout than the cavalry horse.

Horses must be conditioned, ready to do hard work. For the good ones the maximum price is $200.00.

Colors

For both Cavalry and Artillery, solid dark colors are preferred, white markings are objectionable. No greys will be purchased.

Remounts for the Canadian Contingents

In connection with the mobilization of the First Canadian Contingent, in the neighbourhood of 7,000 horses were purchased by the Dominion Militia Department.

Orders have been issued and arrangements made for the purchase of about 10,000 horses for the Second Contingent. Under is given a copy of the posters used:

MILITARY HORSES WANTED

No. 1—Riding Horses

Age, 5 to 9 years; Height, 15 to 16 Hands; Weight, 1000 to 1150 pounds.

No. 2—Artillery Horses

Age, 5 to 9 years; Height, 15 to 16 Hands; Weight, 1050 to 1250 pounds.

No. 3—Draught Horses

Age, 5 to 9 years; Height, 15.2 to 16 Hands; Weight, 1250 to 1450 pounds.

Colors

Bays, Browns, Blacks, Chestnuts, Blue Roans, Red Roans. NO GREYS.

All horses must be sound, of good conformation, free from blemishes and broken to harness or saddle.

Horses will be Inspected at.....
on.....
.....
Purchasing Officer.

Two commissioners have been appointed for Canada. Sir Adam Beck has charge of the buying in Ontario, Quebec, and the Maritime Provinces, while Col. A. D. MacRae of Vancouver has charge in the four Western Provinces. The Eastern Division is divided into eleven districts, and purchasing agents and veterinary inspectors have been appointed for each. In the Western Provinces buying centres will be established at various points, such as Winnipeg, Brandon, Regina, Saskatoon, Swift Current, Medicine Hat, Calgary, Edmonton and Vancouver. Regular purchasing agents will be appointed, if, in fact, they have not already been appointed to look after the purchasing throughout the West.

Purchasing agents are instructed to carry out the policy of the Militia Department by dealing with the farmer or original owner entirely, in regard to the purchasing of horses.

Canadian Horses in South Africa

During the South African War, a goodly number of Canadian horses were purchased by the British and Dominion Governments for army use. These horses proved to be particularly suitable, and to possess hardiness and stamina in a marked degree. An officer of the Second Contingent, on his return to Canada, reported that the best artillery horses he saw in Africa came from Eastern Canada, particularly from the Valley of the Ottawa and sections of Quebec. One of the veterinary officers, who had special opportunities of studying the horse question, reported that the so-called broncho of the Western Plains proved to be the hardiest of the cavalry horses.

They possessed more stamina and endurance than the famous Waler of Australia.

Saskatchewan Horses Donated to the British War Office

The Provincial Government of Saskatchewan donated something over thirteen hundred cavalry and artillery horses to the British War Office. These horses were purchased at various points throughout the Province, during the early fall, and collected at central points from which they were shipped to Montreal and thence to Great Britain. The Province purchased the horses and paid all expenses of transportation until they were landed in England and handed over to the British War Office.

This consignment was composed of approximately equal numbers that were suitable for cavalry and artillery purposes. After looking these over at Montreal, General Benson, the representative of the British War Office, expressed himself as particularly pleased, and vouchsafed the opinion that these horses would prove both hardy and suitable for army purposes. The loss in transportation was something under one per cent. The horses arrived in Britain in particularly good condition, and have since been distributed among the Territorials.

Distribution of Pure-Bred Stallions

In order to encourage and aid newly settled districts or districts where there are no pure-bred stallions standing for service and where the people are unable to purchase same for themselves, to improve their horses by the use of good pure-bred sires, the Dominion Live Stock Branch, during the last two years, has loaned pure-bred stallions to approved Associations that conform to the prescribed regulations. To date over one hundred stallions have been placed, and the branch is prepared to continue the work during 1915.

For booklet giving full particulars apply to the Live Stock Commissioner, Ottawa, Canada.

Federal Assistance to Horse Breeding

The farmers of any district wishing to work for the betterment of Horse Breeding by encouraging the use of sound, individually excellent, pure-bred sires may form a Breeder's Club for the purpose of hiring a pure-bred stallion for the benefit of the members. These Breeders' Clubs, by organizing under and adopting the Constitution and By-laws and conforming to the various Rules and Regulations governing this grant, may participate in the Federal Assistance given to such Clubs. This consists in paying practically 25 per cent. of the service fees on a guaranteed number of mares.

With a view to encouraging the breeding of Remounts, the portion paid by the Live Stock Branch to Clubs hiring suitable Thoroughbred stallions shall be 40 per cent. on all mares except Thoroughbred mares.

For the booklet on Federal Assistance and all information regarding this, address the Live Stock Commissioner, Ottawa, Canada.

Items of Interest

A conservative estimate places the number of horses owned by the Allies at 48,000,000, and of the enemy at 8,700,000.

An estimate of the number of horses engaged in the War is 1,000,000.

The estimated **life of the Cavalry Horse is seven days**; for that of the **Artillery Horse thirty days.**

For illustration, taking the average horse's life as thirty days, 12,000,000 will be required for army purposes in one year.

The British War Office purchased in America, up until December 31, 1914, approximately 50,000 horses. Of this number between 6,000 and 7,000 were obtained in Canada.

The Canadian Government purchased about 7,000 horses for the First Contingent. Another 10,000 are now being bought for the Second Contingent.

The French Government has purchased many thousands in the United States, one firm alone having a contract for 20,000 head.

The Italian Government is also in the market to purchase remounts. A Toronto firm was recently offered a contract for 5,000 horses.

The question regarding the suitability of Canadian versus American horses for army purposes has recently been much discussed. Northern-bred horses, like Northern-bred men, have proven themselves to be hardier than those raised in warmer countries.

The Canadian climatic conditions and the feeds available are such as to produce stronger, hardier horses than those raised under a milder climate and upon softer feeds. The Canadian oat-fed horse has a superior quality of bone and muscle. He has also more endurance and stamina than the soft, fat corn-fed horse raised farther south.

The Outlook

At present there is very little demand for heavy drafters, farm chunks, or horses suitable for lumbering or mining purposes. However, as Canada will undoubtedly cultivate more land during the next few years, a goodly number of draft horses will be required, though the prices may not maintain the high level reached during the past years. The great demand for cavalry and artillery, in all likelihood, will take all our light horses, also all the horses used for delivery and express work. In fact, it would appear that the warring countries would practically be depleted of their light horse stock, and also of their light draft or bus horses. This would indicate that once peace is restored all classes of horses will find a ready market, while in certain classes the demand must needs far exceed the supply.

THE MEAT SUPPLY

Meat Inspection Division Department of Agriculture, Canada

Canada, like all other meat-producing countries, has a shortage of live-stock, more particularly in cattle and sheep. Hogs are plentiful in the Prairie Provinces, but the same cannot be said of Ontario and Quebec, as is evidenced by the fact that the total number slaughtered at inspected establishments for the year ending March 31, 1914, was 500,000 less than the total slaughtered for the year ending 1912, but the Western provinces made up the deficiency and the stock of hogs in the West this year will likely be much higher than last.

There is a growing market in the United States, which has a greater shortage than Canada.

Of all meat consumed in Great Britain, about forty per cent is imported, the rest is home supplied. Germany, on the contrary, imports only about six per cent. of her meat requirements. Germany is reported to have taken off the customs duty on meats, and to have raised the three weeks' quarantine on live-stock. Large quantities of stock are reported to be reaching Germany from Denmark. France also is said to have removed her import duties on meats.

It has been officially announced that Denmark can supply England with 40,000 hogs, in the form of bacon, each week, and the same quantity of butter in hundred weights (112 pounds).

The United States Consul at Chefoo, China, reports that for the past six months three thousand cattle per month have been shipped to Vladivostock in Russia for army use, also large quantities of dressed beef. The cattle average 800 to 900 pounds and cost about three cents on the hoof in China.

All Russian exports of food products have been stopped. Large quantities of butter are shipped from Siberia, the amount for 1913 being 64,938 tons. Fifty per cent. of this went to England and the balance to Germany. Russian exports of eggs for the same year were more than 300,000,000 dozen.

Ireland can ship to England large quantities of live-stock, as well as bacon, butter and eggs. Her live-stock exports for 1913 were:—

Cattle	Sheep	Hogs
1,105,000	658,000	197,000

Her export of hogs would have been about 500,000, but for the shipping restrictions in connection with Foot and Mouth Disease.

While England retains her command of the seas, there will be no fear of a food shortage for Great Britain, more especially as Australia and New Zealand are reported to have stopped all food exports to foreign countries except Great Britain.

The following tables throw light on the present situation in regard to meat supplies:—

Numbers of Live Stock in Countries at War

Country	Cattle	Swine	Sheep
Austria	17,788,000	14,540,000	13,477,000
Germany	20,158,738	21,924,000	5,787,848
Belgium	1,831,000	1,349,000	.....
France	14,552,430	6,904,000	16,425,330
Russia	36,306,000	13,521,000	48,176,000
Servia	858,000	864,000	3,809,000
United Kingdom	11,909,469	3,334,000	28,951,469

Numbers of Live Stock in Principal Meat Producing Countries

Country		Cattle	Sheep
Argentine	1912	29,016,000	80,401,486
Uruguay	1908	8,192,602	26,286,296
Paraguay	Estimated	5,500,000	214,060
Brazil	Estimated	25,000,000	.....
United States	1913	58,386,000	51,873,000
Canada	1912	7,103,702	2,393,950
Mexico	1902	5,142,457	3,424,430
Australia	1911	11,358,977	92,897,368
New Zealand	1911	2,020,171	23,996,126
United Kingdom	1912	11,909.469	28,951,469
Germany	1912	20,158,738	5,787,848
France	1911	14,552,430	16,425,330

Proportion of Cattle to Population

Country		Population	Cattle per head of Population
Argentina	1910	7,123,663	4.04
Uruguay	1908	1,094,686	7.48
Brazil	Estimated	21,580,000	1.16
Paraguay	Estimated	800,000	6.87
United States	1912	95,410,503	.61
Canada	1911	7,204,772	.99
Mexico	1910	15,063,207	.34
Australia	1911	4,918,707	2.31
New Zealand	1911	1,021,066	1.97
United Kingdom	1911	45,365,599	.26
Germany	1911	64,925,993	.31
France	1910	39,601,509	.37

British Imports of Meat for 1913

These include all kinds of meat, fresh, chilled, frozen, cured and canned

	Cwt.
Argentina	8,692,312
Australia	3,860,849
United States	2,847,054
Denmark	2,622,608
New Zealand	2,545,476
Netherlands	995,666
Uruguay	740,166
Canada	355,608
Russia	213,251
Chili	170,865
Other Countries	237,353
	23,281,208

Meat Imports of Great Britain six Months ending June, 1914

Source	Beef Lb.	Mutton Lb.	Bacon Lb.	Pork Lb.
Argentina	368,669,800	64,528,400	.....	.....
Australia	69,146,100	89,830,200	.....	.....
New Zealand	19,933,400	141,999,700	.....	.....
Uruguay	47,818,400	2,721,600	.....	.....
United States	30,000	.....	81,438,800	292,400
Canada	.....	.....	13,710,700	.....
Netherlands	.....	3,101,100	.....	41,580,600
Denmark	.....	.....	135,500,700	.....
Other countries	340,200	12,590,900	29,558,500	2,857,800
Totals	505,937,900	314,671,900	260,208,700	44,630,800
Increase over 6 months, 1913	67,000,000	24,000,000	22,000,000	.....

Canada

Imports and Exports of Meats and Live Stock, year ending March 31st, 1914

	Imports	Exports
Beef	6,204,842 lb.	13,617,707 lb.
Mutton	5,610,812 lb.	65,167 lb.
Bacon and Pork	19,215,273 lb.	27,720,135 lb.
Dried, Smoked and other Meats	4,007,851 lb.	2,850,642 lb.
Lard	5,705,895 lb.	193,222 lb.
Butter	7,317,259 lb.	1,352,875 lb.
Eggs	11,264,108 doz.	485,202 doz.
Cattle	9,369 head	219,848 head
Sheep	209,779 head	20,591 head
Swine	.....	28,207 head

THE DAIRYING INDUSTRY

J. A. RUDDICK,

Dominion Dairy Commissioner.

1. The total number of milch cows in Canada in 1911, as given in the Fifth Census, was 2,594,179. The following table shows how they were distributed by provinces as compared with 1901.

2. **Table I**

Milch Cows in Canada

	1901	1911
Ontario	1,065,763	1,032,979
Quebec	767,825	753,134
New Brunswick	111,084	108,532
Nova Scotia	138,817	129,302
P.E. Island	56,437	52,109
Manitoba	141,481	155,337
British Columbia	24,535	33,953
Saskatchewan	56,634	181,146
Alberta	46,101	147,687
Totals for Canada	2,408,677	2,594,179
Increase in 10 years	.....	185,502

3. **Table II**

Total Value of Dairy Products by Provinces in 1910 as compared with 1900

	1900	1910	Increase
Ontario	$34,776,330	$43,332,047	$8,555,717
Quebec	20,207,826	31,663,220	11,455,394
New Brunswick	2,260,537	3,998,742	1,738,205
Nova Scotia	2,885,997	4,618,108	1,732,111
P. E. Island	1,111,614	1,607,672	496,058
Manitoba	2,792,606	6,077,982	3,285,376
British Columbia	1,159,993	2,620,495	1,460,502
Saskatchewan	729,574	7,566,007	6,836,433
Alberta	546,476	7,855,751	7,309,275
Totals for Canada	$66,470,953	$109,340,024	$42,868,981

4. Increase in number of cows 7 per cent.

5. Increase in value of total products (butter, cheese, condensed milk, and milk and cream consumed) 60 per cent.

6. In 1900 the value of the total product per cow was $27. In 1910 it was $42, due partly to higher prices. The figures for 1914, if known, would be still higher.

7. **Table III**

Comparative Statistics of the Dairying Industry expressed in Terms of Milk, showing Production, Exports, Imports, and Total and Per Capita Consumption in the Census Years 1901 and 1911

	Census 1901	Census 1911	Per cent. of Increase or Decrease
Population of Canada	5,371,315	7,204,838	+34.13
	Lbs.	Lbs.	
Total Production of Milk	6,866,834,000	9,871,178,103	+43.75
Exports of Dairy Products as Milk	2,514,596,967	2,236,663,687	−11.05
Imports of Dairy Products as Milk	34,886,346	39,871,207	+14.28
Total Comsumption as Milk	4,387,123,379	7,674,385,623	+74.92
Per Capita Consumption as Milk.	816.76	1,065.17	+30.41
No. Milch Cows in Canada	2,408,677	2,594,179	+ 7.70
Average pounds Milk per Cow	2,850	3,805	+33.50

NOTE—As milk production was not included in the 1901 Census the quantity shown in the 1901 column was arrived at as follows: The total value of all dairy products in 1900 was $66,470,953, which included the manufactured value of cheese and butter made in factories, and the average gross value of the milk supplied to factories was 96.8 cents per hundred lbs. Taking this figure as a basis, the above total value represents a total milk production of 6,866,834,000 lbs.

8. **Table IV**

Value of Different Products in 1910

Factory Cheese	$21,587,124
Home Made Cheese	153,036
Creamery Butter	15,645,845
Home Made Butter	39,889,953
Condensed Milk	1,813,971
Milk and Cream consumed and used for Ice Cream	30,250,005
Total	$109,339,934

9. The average annual yield per cow increased in 10 years from 2,850 pounds to 3,805 pounds. It would have required 3,463,571 cows at the average production of 1900 to have produced the quantity of milk shown in the Census for 1910—an increase of 1,054,894 instead of the actual increase of 185,502. This increase in yield represents at least $25,000,000 a year for the number of cows milked in 1910, and it is safe to say that the sum would be larger if it were known for 1914.

The Export Trade

10. In 1904 the export of cheese reached its maximum of 233,980,716 pounds. There has been a steady decline since that year. In the year ended March 31, 1914, the quantity exported was 144,478,340 pounds.

11. Butter exports reached the maximum of 34,128,944 pounds in 1903, and have since declined to 1,228,753 pounds in 1913-14.

12. Table V

Detailed Exports of Dairy Products for year ended March 31, 1914

To all Countries	Quantity	Value
Cheese.....Lb.	144,478,340	$18,868,785
Butter..... "	1,228,753	309,046
Cream.....Gal.	1,323,929	1,289,680
Con. milk..Lb.	9,339,382	666,941
Casein..... "	270,486	11,071
Fresh milk..Gal.	307,188	47,645
Total value.....		$21,193,168

13. The export of cream, to the United States has attracted some attention since the reduction of duty from 20 cents to 5 cents per gallon under the Payne-Aldrich tariff of August 5, 1909. It was expected that the reduction of the U.S. duty on butter to 2½ cents per pound and of cheese to 20 per cent. with cream on the free list on October 3, 1913, would have the effect of greatly increasing the shipments of these articles to that market but these expectations have not been realized.

14. Table VI

Total Exports of Cheese and Butter in Fiscal Years 1880 to 1914, inclusive.

BUTTER

Year	Quantity	Value
Year ended June 30:	Lb.	$
1880.....	18,535,362	3,058,069
1890.....	1,951,585	340,131
1891.....	3,768,101	602,175
1892.....	5,736,696	1,056,058
1893.....	7,036,013	1,296,814
1894.....	5,534,621	1,095,588
1895.....	3,650,258	697,476
1896.....	5,889,241	1,052,089

BUTTER—Con.

Year	Quantity	Value
Year ended June 30:	Lb.	$
1897.....	11,453,351	2,089,173
1898.....	11,253,787	2,046,686
1899.....	20,139,195	3,700,873
1900.....	25,259,737	5,122,156
1901.....	16,335,528	3,295,663
1902.....	27,855,978	5,660,541
1903.....	34,128,944	6,954,618
1904.....	24,568,001	4,724,155
1905.....	31,754,303	5,930,379
1906.....	34,031,525	7,075,539
Year ended March 31:		
1907 (9 months)..	18,078,508	4,011,609
1908.....	4,786,954	1,068,703
1909.....	1,326,355	1,521,436
1910.....	4,615,380	1,010,274
1911.....	3,142,682	744,288
1912.....	8,844,402	2,077,916
1913.....	828,323	223,578
1914.....	1,228,753	309,046

CHEESE

Year	Quantity	Value
Year ended June 30:	Lb.	$
1880.....	40,368,678	3,893,366
1890.....	94,260,187	9,372,212
1891.....	106,202,140	9,508,800
1892.....	118,270,052	11,652,412
1893.....	133,946,365	13,407,470
1894.....	154,977,480	15,488,191
1895.....	146,004,650	14,253,002
1896.....	164,689,123	13,956,571
1897.....	164,220,699	14,676,239
1898.....	196,703,323	17,572,763
1899.....	189,827,839	16,776,765
1900.....	185,984,430	19,856,324
1901.....	195,926,397	20,696,951
1902.....	200,946,401	19,986,281
1903.....	229,099,925	24,712,943
1904.....	233,980,716	24,184,566
1905.....	215,733,259	20,300,500
1906.....	215,834,543	24,433,169
Year ended Mar. 31:		
1907 (9 months)..	178,141,567	22,006,584
1908.....	189,710,463	22,887,237
1909.....	164,907,139	20,384,666
1910.....	180,859,886	21,607,692
1911.....	181,895,724	20,739,507
1912.....	163,450,684	20,888,818
1913.....	155,216,392	20,697,144
1914.....	144,478,340	18,868,785

Markets for Canadian Dairy Produce

15. During the past ten years Canada has exported dairy products to some 30 different countries, but the quantities are very small outside of the United States, the West Indies and Newfoundland. The United Kingdom is still and will continue to be our chief market.

16. In 1913 the imports of butter into the United Kingdom was 463,570,464 pounds. The imports of cheese of all kinds during the same period was 257,328,848 pounds, of which Canada supplied 56 per cent.

17. The decrease in shipments of cheese from Canada has been met by a corresponding increase in the exports from New Zealand, the only other country which supplies the United Kingdom with cheese of the same class as Canadian.

18. New Zealand cheese has not driven Canadian cheese out of the market. New Zealand is simply supplying the quantity which Canada has been unable to supply.

19. Canadian cheese easily holds the premier place in the importations of the United Kingdom, both in point of quantity and quality. Importers complain only that they cannot get more of it.

20. It would be quite possible to increase the shipments of cheese to the United Kingdom, as Canadian cheese would receive the preference over the New Zealand.

21. While the export trade has always attracted most attention it must not be forgotten that the home trade is by far the most important, and that it is five times as large. The total value of milk and its products consumed in Canada is about $100,000,000 annually.

Probabilities for Enlarged Markets

22. During the year ended March 31, 1914, Canada imported 7,317,259 pounds of butter, chiefly from New Zealand. There is no reason why all this butter should not be produced in Canada, as it will be in the near future.

23. As stated in 20 the United Kingdom is prepared to receive a larger quantity of butter and cheese from Canada than is now being sent.

24. The home market has increased enormously during the past 10 years (see Table III.)

Three factors have contributed to this increase, namely—1. Increase of population. 2. Improvement in quality of products. 3. Increased purchasing power.

Another factor should be added by judicious advertisement of the higher food value of milk and its products as compared with other foods now much more extensively used.

Possibilities of Increased Production

25. The production of milk in Canada, while amounting to a large quantity in the aggregate, is comparatively small per acre or for the area devoted to dairy or mixed farming.

26. It is claimed that more cheese is produced within a radius of 40 miles of Whitchurch, Shropshire, England, than is exported from the whole of Canada.

27. Holland, the area of which is only equal to that part of Ontario lying southwest of a line drawn from Southampton on Lake Huron to the city of Hamilton, produces over 180,000,000 pounds of cheese and 140,000,000 pounds of butter annually.

28. There is more cheese produced in England and Scotland than in the whole of Canada, and the bulk of it comes from a half dozen counties.

29. In parts of Switzerland as many as 263 dairy cattle are maintained per square mile.

30. The average yield of milk per cow is still very low in Canada and might easily be increased 25 or even 50 per cent. The records of the Cow Testing Associations and Dairy Record Centres show that many farmers have, by judicious selection, following systematic testing, increased the yield from their herds as much as 25 and 30 per cent. in three years.

31. The farmers of Canada as a class have not yet learned how important it is to keep cows in good condition. If their

feed is scarce the cows get short rations. In older dairying countries the farmers take the view that they cannot afford to allow the cows to get into poor condition.

32. The growth of our towns and cities, with an increasing demand for winter milk and cream, together with the shortage of butter, gives a new importance to winter dairying. Following the inauguration of the winter dairying movement about 20 years ago there came a period of low prices which discouraged many who were inclined to produce winter milk. Moreover, at that time the farmers were not generally so well equipped as they are now—there were not so many silos for one thing. The winter market is now a high one and is likely to be so in future.

33. A very important factor in keeping up winter prices is the demand for milk and cream which comes from the New England centres of population. If one looks at the map it will be seen that this great manufacturing district has only a limited territory within the United States from which to draw supplies, and much of that territory is very unproductive. If they look to the southward they compete with New York City. As a result these cities are looking to southern Quebec for a portion of their supplies.

34. A more regular production throughout the year makes it easier to retain good customers, simplifies some of the labour problems, both on the farm and in the factory, by affording yearly employment.

35. Percentage of cattle compared with population in different countries (No. of cattle to every 100 of population).

New Zealand	197	per cent.
Denmark	83	"
United States	69	"
Sweden	48	"
Switzerland	38	"
Canada	36	"
France	36	"
Austria	32	"
Germany	31	"
United Kingdom	27	"

For a country without a large industrial population Canada takes a very low place in the foregoing list.

CEREALS AND FLOUR

C. E. SAUNDERS, PH.D.

CENTRAL EXPERIMENTAL FARM, OTTAWA.

Wheat

Spring wheat can be grown successfully in almost all of the settled districts of Canada. Winter wheat is, however, more profitable in certain relatively small areas, especially south-western Ontario and south-western British Columbia, where it is cultivated to good advantage. To a much smaller extent, winter wheat is also grown in south-western Alberta and in some of the northern parts of the settled portion of Manitoba.

The advantage of winter wheat, in districts where there is not too great danger of winter-killing, lies in its heavier crop. The plants, having two cool seasons (autumn and spring) for root growth, are stronger and are better able than spring wheat to withstand drought in summer. They usually produce better filled heads, and the kernels are generally larger than those of spring wheat.

In regard to relative values, the spring wheats being as a rule harder than the winter varieties, and containing a higher percentage of protein, are more valuable from a nutritive point of view, and generally sell at a higher price. This difference in price is accentuated because the character of the wheat grown in some of the chief wheat-importing countries of Europe is of a starchy character, and somewhat deficient in protein.

Among the best varieties of spring wheat in Canada may be mentioned Marquis, Red Fife, White Fife and Huron. White Russian is also a well-known sort which gives heavy yields in parts of the eastern provinces. In quality, however, it is disappointing, as it resembles the winter varieties.

Flour

Those varieties of wheat which are high in protein are usually of a hard, non-starchy appearance, and yield flour of quite different character from that obtained from the soft, starchy wheats.

Hardness of kernel is not a fixed character in any of the common sorts of wheat, though some varieties have a greater tendency towards hardness than others. The climatic conditions under which the wheat is grown exercise a great influence on the character as well as the quantity of the crop.

As a general rule wheat grown on the great central prairies of Canada is hard, while wheat produced in more moist climates or on land recently cleared of trees is apt to be starchy.

The flour of course follows the wheat in composition. Hard wheat produces flour high in protein and soft wheat yields starchy flour. Both types of flour are valuable. As a rule flour from hard wheat sells at a higher price than that from soft wheat, because it is less plentiful in the world's great markets; but sometimes, owing to a temporary scarcity, soft flour commands the higher price.

For the best results in cooking both types of flour are required, the flour rich in protein being valuable when one wishes to produce very light bread, while the starchy flour is useful when more compact bread is desired, or for the making of certain types of biscuits, pastry and cake.

Oats

Oats are much more extensively grown, in most parts of Canada, than any other cereal. They have shown very great adaptability to all sorts of soils and climates, their only serious defects being rather weak straw, under some conditions, and the sensitiveness of the seed, when nearly ripe, to frost. The vitality of oats is often seriously injured even when the effects of the frost are scarcely visible. Oats which have been subjected to any frost before ripening should be carefully tested for vitality before being used for seed.

Among the best standard kinds of oats may be mentioned Banner (also called American Banner) Ligowo and Daubeney. Banner is very productive. Ligowo is productive and rather early in ripening. Daubeney is very early in ripening and produces smaller kernels and shorter straw than the other sorts mentioned.

Farmers should be particularly on their guard against much-advertised and highly-praised varieties of oats. Some of these sorts are very good, and occasionally one of them may prove almost equal to the old standard sorts; but as a rule it is much more economical to allow the various experiment stations to make a careful study of every new variety (many of which are really old varieties under new names) before purchasing seed.

Barley

On account of its early-ripening habit and large yield, barley is a very valuable cereal. It is not, however, so useful as oats, nor does it succeed so well under such a variety of conditions.

The six-row types are much more generally grown in Canada than those having only two rows of kernels. Indeed there is rather an unjust prejudice against the latter sorts, in the minds of many farmers. As a rule, the six-row types ripen the earlier, and this is an advantage, except when barley and oats are being grown together. For such mixtures it is advisable to choose a late-maturing, two-row barley, or else an exceptionally early oat. The ordinary six-row barleys ripen considerably earlier than the best standard varieties of oats.

For brewing purposes both types of barley are used, and a sharp difference of opinion exists among brewers as to their relative merits. In Canada the six-row types are quite popular for this purpose.

Some of the leading barleys are:—

Six-row:—Manchurian, O.A.C. No. 21, Odessa.

Two-row:—Duckbill, Canadian Thorpe, Chevalier.

POINTED PARAGRAPHS ON SEED

GEO. H. CLARK

Dominion Seed Commissioner, Ottawa.

One of the first essentials for highest yields and best quality in all crops is the use of good seed.

The value of the grain crops produced in Canada could be enormously increased each year by the use of better seed.

Wheat, Oats, Barley and Flax used for Seed in Canada

In the spring of 1913 an inquiry was instituted by the Seed Branch with the object of securing definite information in regard to the quality of the wheat, oats, barley and flax being used for seed. The next season the work was conducted with ensilage corn. Over 3,700 samples were collected from representative farmers and forwarded to the seed laboratory at Ottawa with information in regard to variety, sources of supply, treatment for smut prevention, rate of seeding, cleaning and selection and other matters. From the inquiry it is evident that there is a very general lack of appreciation of good seed throughout the country. The following are some of the outstanding features brought out.

Varieties

The lack of attention given to the selection of the varieties most suitable to the various districts is indicated by the fact that over 40 per cent. of the farmers from whom samples of wheat, oats and barley were collected did not know the variety names of the grain they were growing.

Of the 978 samples of oats reported, the variety name could not be given for 427. Banner was the most popular variety, being reported 264 times compared with Abundance, 101; Sensation, 27; Ligowo, 14; 20th Century, 11; Newmarket, 10.

With barley, out of 408 samples reported, 295 were without variety names. The most widely-grown varieties were O.A.C. No. 21 and Mandscheuri.

With spring wheat, out of 506 samples reported, 106 were without variety names. Red Fife was the most widely-grown variety, being reported 252 times compared with White Fife, 39; Marquis, 38; White Russian, 19; Stanley, 17: Preston, 13.

Sources of Supply

Slightly over 75 per cent. of the farmers from whom samples of wheat, oats, barley and flax were collected grew their own seed. About 12 per cent. secured it from other farmers and 5 per cent. from dealers and seed merchants. The proportion of farmers who secured their seed from dealers was largest in Quebec, Nova Scotia and New Brunswick.

Nearly all of the grain purchased from dealers and used for seed in the eastern provinces comes from Western Canada, and most of it is ordinary commercial grain that has had no special cleaning or selection. Practically all grain grown in Western Canada that passes through the elevators at Fort William and Port Arthur contains large numbers and many kinds of weed seeds. In handling grain at the terminal elevators cars containing many noxious and other weed seeds are mixed with clean grain of the same grade, thus contaminating the whole bin or whole bulk lot. Because of this, no grain coming out of the terminal elevators is fit for seed. Most of it is so foul with weed seeds as to constitute a dangerous source of introducing noxious weeds when used for feed unless carefully handled. Analysis of five samples of No. 2 Canada Western oats taken from shipments from five terminal elevators at Fort William showed that the oats averaged 313 noxious weed seeds per pound, including nine species, and a much larger variety and number of other weed seeds. These samples can be taken as fairly representative of the No. 2 oats taken from the terminal elevators.

Grain of this sort cannot be legally sold for seed but it is offered under the Canada Grain Act grades or on sample without being definitely represented as seed. Farmers who buy feed grain and sow it do so at their own risk and usually with very disappointing results.

The commercial grain handled by local dealers and often used for seed should not be confused with the seed grain sold by reputable seed merchants which is usually of good quality and well cleaned.

Weed Seeds sown with Grain

The extent to which weeds are sown with seed grain is shown by a summary of the tests of the samples collected. In a few cases samples were taken from lots

that were to be cleaned before sowing, so that the figures given above are inaccurate to the extent to which weed seeds were removed from these lots by cleaning. However, comparison of these uncleaned samples with those which had been passed through a fanning mill indicates that little improvement would be effected.

Of the 978 samples of oats analysed, 547, or 56 per cent. contained seeds of weeds classed as noxious under the Seed Control Act, the highest number being 4,838 per pound and the average 76. Weed seeds other than those classed as noxious were found in 860, or 88 per cent. of the samples, the largest number being 6,954 per pound and the average 239. With this weed seed content and the rate of seeding reported, weed seeds would be placed on the land sown with oats at an average rate of 40 noxious and 130 other sorts per square rod.

Of the 408 samples of barley tested, 234 or 57 per cent. contained noxious weed seeds, the highest number being 2,539 per pound and the average 53. Other weed seeds were found in 352, or 86 per cent. of the samples, the highest number being 9,968 per pound and the average 445. With this weed seed content and the rate of seeding reported, weed seeds would be placed on the land at an average rate of over 25 noxious and 260 other sorts per square rod.

Of the 506 samples of spring wheat tested, 271, or nearly 54 per cent. contained noxious weed seeds, the highest number being 11,528 per pound and the average 79. Other weed seeds were found in 454, or nearly 90 per cent. of the samples, the largest number being 17,415 per pound and the average 343 per pound. With this weed seed content and the rate of seeding reported, the weed seeds placed on the land would average about 49 noxious and 214 other sorts per square rod.

Weed seeds were especially prevalent in the flax samples. Out of 144 tested, 127, or 88 per cent. contained noxious weed seeds, the largest number per pound being 15,424 and the average 662. Other weed seeds were present in all but seven samples, the highest number being 13,984 per pound and the average 4,087. With this weed seed content and the rate of seeding reported, the weeds placed on the land through sowing flax would average 140 noxious and 760 other sorts per square rod.

Cleaning Seed

The inquiry shows that there is a very general lack of attention to the proper cleaning of seed. Nearly 11 per cent. of the wheat, oats, barley and flax sampled for the inquiry was being sown direct from the thresher with no cleaning whatever. Over 88 per cent. of the lots were reported as being cleaned with a fanning mill, some being put through twice, but in most cases the cleaning was very poorly done.

In order to make first class seed it is usually advisable to reduce the bulk from one-third to one-half by cleaning and grading, in order to remove all weed seeds and other impurities as well as the inferior kernels. Most farmers appear to be content with putting their grain through a fanning mill once or twice when preparing for seed and often the mills are not properly equipped. Many of those in use have only a few screens and riddles designed for cleaning grain for market and are entirely inadequate for properly preparing seed. For small seeds the equipment is even worse.

The lack of results from attempts at cleaning with fanning mills not properly equipped or regulated is illustrated by some of the samples collected in connection with the inquiry.

One sample of flax reported as cleaned with a common fanning mill contained 17 species of weed seeds including over 2,500 tumbling mustard, over 1,000 lamb's quarters, 803 black bindweed and 140 wild oats per pound, besides wheat, oats and flax.

A sample of oats reported as cleaned with a fanning mill contained 4,800 wild mustard seeds, 38 Canada thistle and 174 other weed seeds per pound.

Another sample of oats supposed to be cleaned with a fanning mill contained over 7,000 weed seeds per pound.

One of the most valuable screens for cleaning grain is known as the Buckwheat screen, but it is not supplied with fanning

mills unless specially ordered. It is made of zinc with perforations in the form of an equilateral triangle, the sizes of which are 9/64 inch or 4 millimetres. This screen will make almost a complete separation of wild buckwheat, which is by far the most prevalent weed seed in wheat, oats and barley, and it will also remove smaller weed seeds, including the mustards. The seeds of wild buckwheat when ground have high feeding value.

With flax good results in cleaning can usually be obtained by the use of a woven wire screen, 3 x 16 inch size (3 spaces to the inch one way and 16 the other), in the upper shoe of the mill to carry off the large foreign seeds and a zinc screen with perforations 1/12 inch diameter in the lower shoe which will let through most of the small weed seeds with practically no loss of flax. It may be advisable to use screens somewhat different from these sizes, depending upon the weed seeds contained.

For cleaning timothy seed a zinc riddle with 1/22 inch perforations in the top shoe and a woven wire screen 30 x 30 (30 spaces to the inch each way) in the lower shoe will usually be found satisfactory. The 1/22 inch riddle will remove seeds of Canada thistle, docks, ribgrass, green foxtail, etc., while the 30 x 30 will let through small seeds such as cinquefoil, plantain and chickweed. For worm-seed mustard a 28 x 28 sieve is better for the lower shoe, and for ox-eye daisy a 8 x 30.

Treatment for Smut Prevention

The practice of treating seed grain for smut prevention is quite general throughout the Prairie Provinces. In Eastern Canada there is considerable smut in the grain crops each year, but it has not been sufficiently prevalent to make treatment for its prevention general. The losses are much greater than is commonly realized, and the value of the crop could be considerably increased if treatment for smut prevention were more generally practised. Over half the samples of fall wheat collected in Ontario contain smut, and it is also very common in the spring crops, especially oats. Reports on the samples treated indicate that formalin, one pound in forty gallons of water, is much more popular than bluestone as a preventive.

Vitality of Grain and Flax

Among the most common causes of low vitality with cereals are frost before ripening, immaturity, weathering, heating, improper curing, mould and rust. The germinating strength of grain is often greatly lowered by the presence of small immature and shrunken kernels which produce weak plants or do not grow at all if conditions are unfavourable. Such kernels are especially prevalent in oats. All grain intended for seed should be thoroughly cleaned and graded to retain only the strong kernels.

The average germination of the oat samples taken in connection with the inquiry was 87 per cent., which is lower than with any of the other grains. Apart from the presence of weak kernels through lack of proper cleaning, the most common cause of low vitality in oats is frost. A very light frost when oats are in the milk stage is sufficient to ruin them for seed. When they are more matured the injury is not so great, but in any case its extent is difficult to detect. Oats quite normal in appearance and weight may be so badly damaged by frost that their value for seed is completely destroyed. It is, therefore, very important that a germination test be made when there is a possibility of the seed having been frosted before harvesting. Injury to vitality from other causes is usually more evident.

The barley samples averaged 91 per cent. germination. About 5 per cent. of them germinated below 63 per cent., the largest proportion being from Quebec, Manitoba and Saskatchewan. Wet weather during harvest and insufficient drying frequently causes low germination in barley. The vitality is also quite susceptible to frost injury, and often the extent of the damage is not shown, although usually the hull is more or less loosened and has a shrunken appearance.

With wheat, frost injury is more apparent than with any of the other grains, being evidenced in severe cases by shrunken and discolored kernels. Lighter

injury is shown by a fine cracking or crimping of the seed coat. As a rule the injury to vitality from frost is not so serious as appearance might indicate. Wheat that is plump and well matured before being frozen is very little injured for seeding. Damage from weathering or heating is not always so evident, although wheat that looks strong will usually germinate well.

The vitality of flax may be impaired by severe weathering or frost, but usually seed that is healthy looking will germinate readily.

Seed Corn

According to the Census returns, 243,491 acres were devoted to corn for the silo in Ontario and 38,375 acres in Quebec in 1911.

The amount and quality of the crop produced is largely dependent on the variety or strain of corn planted and the vitality of the seed. In most districts early maturing varieties and strains are required in order that the corn may mature sufficiently to make sweet ensilage of high feeding value. Failure to secure suitable varieties is the most frequent cause of sour poor quality ensilage. In many cases through the use of seed weak in vitality disappointing yields are obtained, or replanting, resulting in a late, uneven crop, is necessary.

The inquiry, which covered Ontario and part of Quebec, shows that about sixty so-called varieties were being grown, although the number recommended by the Ontario Corn Growers' Association is limited to seven; four Dents and three Flints. The best standard sorts of both Dents and Flints are included, but some varieties which appear to be quite popular would better be replaced.

Not only are many growers using named varieties unsuitable to their conditions but a great deal of corn is being planted the variety of which is not known.

Some ordinary feed corn imported from the central and southern states is used for seed. This corn is almost always of a large late variety entirely unsuitable to Canadian conditions and often the vitality is weakened through heating.

An indication of the popularity of the most widely-grown varieties may be had from the number of times which they were mentioned out of 2,386 reports giving the variety: White Cap Yellow Dent reported 560 times, Leaming, 487; Longfellow, 288; Compton's Early, 217; Wisconsin No. 7, 204; Mammoth Southern Sweet, 156; Salzer North Dakota, 121: Red Cob, 59; King Phillip, 34 and Bailey, 32.

The varieties recommended by the Ontario Corn Growers' Association are: Dents; Wisconsin No 7, White Cap Yellow Dent, Bailey and Golden Glow, Flints; Longfellow, Salzer's North Dakota and Compton's Early. Leaming is not included because there are so many different varieties sent out under this name that it is impossible to depend on getting uniform quality. Golden Glow is a new variety which appears to be exceptionally early. Its suitability has yet to be demonstrated for most districts.

Most corn growers ship their seed on the ear. Purchasing in this way has many advantages although only about 25 per cent of the lots reported were procured in this way. When on the ear the quality of the corn can be much more accurately determined. Before shelling the poorer ears can be discarded and the butts and tips removed, thus making it possible to secure a more uniform and much better sample. Shelled corn may include the butts and tips as well as the off-type ears and nubbins and it is impossible to remove all the inferior kernels even by severe grading. Unless corn has been thoroughly dried before shelling it is more liable to heat and lose its vitality than when on the ear. Results of the germination tests with the samples collected show that the corn on the ear averaged 6 per cent. higher germination than that which was shelled. The proportion germinating 90 per cent. and over was 26 per cent. higher.

Many of the best ensilage growers plant in hills rather than drills. This method produces a larger yield of grain in proportion to stock and leaf and facilitates thorough cultivation and the suppression of weeds. Last season the results appeared to be especially favorable toward the hill method of planting,

although the inquiry shows that only about one-fourth of the growers follow this system.

The vitality of corn is liable to be impaired by a great variety of causes. It is very susceptible to frost injury before maturity and requires to be thoroughly dried and stored with good ventilation. Sometimes it is possible to detect injury to vitality from outward appearances, but usually this is unreliable. The vitality of seed corn should be determined by germination test before planting in order to avoid the danger of a thin stand or replanting.

Excepting south-western Ontario very few farmers grow their own seed corn. According to the inquiry about 81 per cent. is purchased from dealers and about 15 per cent direct from growers. Nearly all the corn handled by dealers is shelled. Some of it is obtained from south-western Ontario but most of it is imported from the central and western states.

Weed Seeds in Feed and Manure

The danger of spreading weeds through feeding dirty grain to horses and other stock is not sufficiently realized. A farmer who feeds his horses oats containing seeds of wild oats and mustards will later find these plants growing in patches all over his field, wherever the horses' droppings have fallen.

Large numbers of weed seeds are put on the land with manure. Many seeds pass uninjured through the digestive tract of farm animals, while others become mixed with the manure and offal from the stables through handling grain and other feeds. When manure is piled and allowed to heat the vitality of most of the weeds is destroyed; but when drawn to the field from the stable, or not left long enough in the pile to become well rotted, manure is one of the most important means of weed dispersal. It is especially dangerous when secured from town or city stables where dirty grain or hay is fed. Grain contaminated with weed seeds should not be brought on a farm even for feed until it has been crushed or ground so as to destroy the vitality of the weed seeds.

Sale of Seed Regulated by Law

The sale of clover, alfalfa, grass, field root, garden vegetable, pasture and fodder crop seeds as well as grain when sold for seeding purposes in Canada is regulated by law.

Timothy, red clover, alsike and alfalfa seed must be marked according to its quality with one of the four following grades: Extra No. 1, No. 1, No. 2, No. 3. Seed below grade No. 3 is prohibited from sale except for recleaning or export.

Farmers may sell their clover and timothy seed to seed merchants for recleaning before having it graded. They may sell seed which is grown and delivered on their own premises without the grade being marked, provided that it is not below the standard for No. 3. If they ship seed to another farmer, sell it to retailers as being in condition for seeding or offer it for sale in a public place, it must be marked with the grade.

All other seed, including grass, millet and seed grain must be free from the seed of noxious weeds or be labelled to show the kinds contained.

All kinds of seed must germinate in the proportion of at least two-thirds of the standard for good seed of the kind or be labelled to show the actual percentage germination.

Any seed dealers or farmers violating the provisions of the Seed Control Act are liable to prosecution.

A staff of about 35 seed inspectors is employed to enforce the Act, but any farmers or purchasers of seed may put it into effect.

If the quality of any seed is suspected, a sample may be sent to the seed laboratory at Ottawa or Calgary for test. These laboratories are maintained for the service of seed merchants and farmers.

Supplies of Clover and Timothy Seed

With normal production there is little difficulty in securing timothy seed of good quality. Most of the supplies for Eastern Canada come from the middle and western states. Timothy seed is grown to quite an extent in the Georgian Bay and Ottawa Valley districts of Ontario and in many parts of Quebec.

As a rule the seed imported from the United States is of high quality in respect to purity.

As a rule Ontario produces much more alsike seed than is required for the Canadian market and large quantities are exported. The continent of Europe is the principal market.

In the year of average production most of the red clover seed required for the Canadian market is grown in Ontario and there is considerable exported. When the crop is poor, supplies are imported, principally from the United States and some from Europe.

Most of the alfalfa seed sold in Canada is imported, owing to the very limited supply of Canadian grown seed. A small amount of seed is produced in the southwestern part of Ontario, and is considered much more suitable to Canadian conditions than the imported stock, on account of its superior hardiness. The best imported seed in point of hardiness is from the northern states. Grim's alfalfa which is a variegated variety is much hardier than the ordinary strains, but owing to scarcity the seed is difficult to secure. Seed of European and Asiatic origin is mostly unsuited to Canadian conditions, as the crops produced are more liable to winter-killing.

Field Root Seeds

Our supplies of field root seeds are practically all imported from France, Germany and England. Fortunately the surplus stock in Canada is sufficient to prevent a seed famine during 1915. Farmers would be well advised to transplant early next spring fifty or more sound good specimen mangels or other roots to get seed for future planting. When planted out, the top of the root should be slightly below the surface of the soil. The soil should not be above medium quality in point of fertility. If grown together for seed, varieties will cross fertilize.

Garden Seeds

Our garden seeds come principally from France, where the area devoted to seed growing will doubtless be very much reduced next year. There is no mysterious science about growing good seed of these crops, and for next year farmers and gardeners should set apart perfect specimens of garden beets, carrots, turnips, cabbage, cauliflower, celery, parsnips and onions and transplant them in ordinary soil in order to be sure of getting good seed for themselves and their less thoughtful neighbours. Flower seeds come principally from Germany, and flower lovers will have to select and save their own seeds or run the risk of having to do without them.

Rape and Vetch Seed

The seed of Dwarf Essex rape and of vetches, which is imported from Europe, will be limited even for next season. It will be necessary for our farmers to grow the seed themselves if the war continues into next year.

Vetch seed is obtained principally from Germany and Russia where it is grown with rye crops and the seed separated by cleaning. A peck of vetch seed per acre sown in a rye crop will give a good yield of vetch seed without materially reducing the yield of rye.

GROWING POTATOES FOR HOME AND MARKET

W. T. MACOUN,
Dominion Horticulturist,
Central Experimental Farm, Ottawa.

When the farmer sows or plants his seed his object should be to get the largest return from the soil. This can only be obtained by the use of good seed and by thorough cultivation; and there is no farm crop the yield of which can be increased so much by these methods as the potato. Potatoes have been grown in a small plot at the rate of over 700 bushels per acre at the Central Experimental Farm, Ottawa, Canada, but so great is the difference in the yield of varieties that while one gave this large yield, another, planted at the same time and in the same kind of soil, yielded only

154 bushels. It will thus be seen how important it is to plant a productive variety.

Varieties and Source of Seed

A variety which is productive in one place may not be productive in another. In some places the season is too short for the later varieties, and as a result the crop is small. A variety which at one time did well in a certain locality may become unprofitable through being diseased or becoming weak in vitality owing to unfavourable seasons. In such a case a change of seed is very desirable. As showing the advantage of a change of seed, it may be stated that new seed potatoes of eleven varieties from the Experimental Farm, Indian Head, Sask., grown at the Central Experimental Farm, Ottawa, yielded on the average at the rate of 368 bushels per acre, while seed potatoes of the same varieties which had been weakened in vitality at Ottawa by unfavourable seasons averaged only 97 bushels per acre. Other striking results could be given of the results from seed from other provinces. Seed from the cooler and moister districts usually give better crops the following year than seed from the warmer and drier ones. Potatoes which are immature when dug will usually give better crops the following year than potatoes which have been either prematurely ripened by hot, dry weather or even that are well ripened normally. It pays to import seed from cooler to warmer climates, as has been learned by experience. Some of the most reliable early varieties are Irish Cobbler, Rochester Rose and Early Ohio, and of medium or later varieties, Carman No. 1, Gold Coin, Empire State, Green Mountain and Wee MacGregor. British varieties which have done exceptionally well in Canada are Table Talk and Davies Warrior.

Condition of Seed when Planted

The condition the potatoes are in when the time for planting arrives is very important. If possible, potatoes should be prevented from sprouting before they are planted, unless sprouted in the light as described later on; and to prevent sprouting it is desirable to keep them in a cool cellar where the temperature does not go much above 35 degrees F. nor below 33 degrees F. The cooler potatoes are kept without freezing the better. When potatoes are kept in a warm, moist cellar, as they so often are, they sprout and the shoots take from the tubers both plant food and moisture, and as these sprouts are usually broken when handling the potatoes, the new shoots which are made when the potato starts to grow in the field have less moisture and less plant food to draw upon, and do not make as vigorous a growth as they otherwise would, and the yield is smaller. The best results will be obtained if the sets are planted immediately after cutting, but if the seed is prepared several days beforehand it will pay well to coat the sets with land plaster or gypsum which will prevent evaporation. The seed potatoes should be free from disease. When potatoes are affected with the "Rhizoctonia" or "Little Potato" disease or the "Common Scab" the following treatment is recommended before the potatoes are cut or planted:—Soak the tubers for three hours in a 1 to 2000 solution of bichloride of mercury (corrosive sublimate) or in 1 pound formalin in 30 imperial gallons of water. As the former chemical is very poisonous and will corrode iron vessels, wooden barrels or tubs should be used. Formalin is not so poisonous but should be used with care.

Kinds of Sets to Use

Many experiments have been tried to determine the best kinds of sets to plant, and on the average it has been found that good marketable tubers cut into pieces so as to have at least three good eyes to a piece are the best. If cut sets are found to dry up after planting, use whole potatoes for seed. It has been found to be a great advantage to "sprout" potatoes in order to have the tubers ready for use earlier than when treated in the ordinary way, and where the season is short to obtain large crops. Medium sized potatoes are selected before they have begun to sprout and placed in single layers in shallow boxes or trays, with

the seed end up. The boxes are then put in a bright, airy, cool place where the temperature is low enough to prevent sprouting. After a few days the potatoes will turn green and the skin become tougher. The potatoes are now given a little more heat, but still kept in a bright place. From the seed end will now develop two or three strong sprouts, and the meaning of exposing the potatoes at first to toughen the skin is now apparent, for most of the eyes do not sprout, and practically the whole strength of the potato is concentrated in a few sprouts at the end. This is what is desired, as the fewer sprouts there are the larger proportion of marketable potatoes there will be in the crop from them. The potatoes are planted whole. If the potatoes are given plenty of light and the place where they are kept fairly cool, the sprouts will become very sturdy and strongly attached to the tuber, and will not be broken off in handling, unless very carelessly used. Tubers will develop more quickly from sprouts made slowly in a bright, cool place than from sprouts which have grown rapidly in a dark place, and, furthermore, the yields will be much heavier. Potatoes which sprout in the dark are very difficult to handle as the sprouts break off very easily. It is not absolutely necessary to place the potatoes with the seed ends up, as very satisfactory results are obtained even when potatoes are emptied indiscriminately into shallow boxes or trays and then treated as already described. The sprout should be about two inches in length at time of planting. If longer, the sets are more difficult to handle.

Soil

The most suitable soil for potatoes is a rich, deep, friable, warm sandy loam with good natural drainage, a constant though not too great a supply of moisture, and well supplied with decayed or decaying vegetable matter. They will, however, succeed well on a great variety of soils. The warmest and best drained soils that can be obtained should be chosen for the early potatoes, and the sets in this case should be planted shallow, so that they will get the advantage of the heat from the surface soil.

Preparation of the Soil

The more thoroughly the soil is prepared the better the results will be. Loose, well pulverised soil is particularly desirable for potatoes. While heavy manuring with barnyard manure is not recommended for potatoes, the use of a moderate quantity is advised. A good way to apply this is on clover sod in autumn. The sod, with the manure, to be turned under in the spring. If manure is used in the spring it should be well rotted and mixed with the soil, not put in the drills with the potatoes. Chemical fertilizers, if used, should be applied at the rate of 500 to 800 lbs. or more per acre, in the proportion of 250 pounds nitrate of soda, 350 pounds superphosphate, and 200 pounds sulphate of potash or muriate of potash per acre. This should be mixed with the soil in the drills.

Planting

As a slight frost will injure the tops, planting should be delayed to within a week of the time when the last frost is likely to occur, but in some districts potatoes may be planted later than in others. Where extra early potatoes are desired chances are taken and potatoes are planted earlier; and, should a frost threaten, the young plants, if they are above ground, may be protected by covering them with soil. The best results have been obtained in Canada by planting the potato sets four to five inches deep for the main crop, and twelve to fourteen inches apart in rows two and one-half feet apart. As has already been stated, potatoes planted early, or if planted in soil which is too wet and cold for best results, may be planted shallower, say an inch deep, where the soil is warmer than it is further down. The sets should be covered as soon as possible after planting, so that they will not dry in the sun.

Cultivation

In field culture much time will be saved in hoeing later in the season if the soil is harrowed, to destroy weeds, just as the potatoes are beginning to come up, and at this time many weeds will have germinated. If the potatoes are in a garden it may be raked over for the same purpose. As a rule, the crop of potatoes will increase in proportion to the number of times the potatoes are cultivated during the growing season. There was found to be an increase of 40 bushels per acre in a crop of potatoes cultivated six times over those cultivated three times. Level cultivation will sometimes give better results than moulding or hilling up, and sometimes the results are not so good. Where the soil is stiff, or where the soil is wet, moulding, or ridging, is desirable, but where the soil is loose and liable to suffer from drought in a dry time, level culture is recommended. Where the soil is both loose and moist and where the climate is moist, ridging will usually give best results. As the crop of potatoes will be much larger if the tops can be kept green until frost than if they are destroyed by insects or diseases in summer, it is important, in addition to thorough cultivation, to protect the tops from injury.

Protection of Plants from Insects and Diseases

The Colorado Potato Beetle and the Cucumber Flea Beetle are the commonest insects which injure the potato tops. The former can be readily killed with Paris Green in the proportion of 8 ounces to 12 ounces to a forty gallon barrel of water, or with Arsenate of Lead in the proportion of 2 to 3 pounds to 40 gallons of water. Paris Green kills quicker than Arsenate of Lead but the latter adheres better than Paris Green, hence a mixture of both in the proportion of 8 ounces of Paris Green and 1½ pounds of Arsenate of Lead to 40 gallons of water will kill quickly and adhere well to the foliage. These poisons will, to some extent, check the Cucumber Flea Beetle, but, in addition to them, a better preventive is a covering of Bordeaux Mixture on the foliage. The Bordeaux Mixture should also be used to control the Early and Late Blights of potatoes, the latter disease causing rot. These are two of the commonest diseases. To control the Early and Late Blight of potatoes spraying with Bordeaux Mixture should be begun before the disease appears and the plants kept covered until autumn. It is safer to start spraying with Bordeaux Mixture when spraying for the Potato Beetles. The poison of the latter may be mixed with the Bordeaux. From three to four sprayings or more will be required, the number depending on the weather. Taking the average of three years, the increase of yield from spraying with Bordeaux Mixture was at the rate of 94 bushels per acre. In some years it is much larger. The importance of keeping plants growing as late as possible is well illustrated in an experiment where the total crop of marketable potatoes per acre when dug on September 1st was 234 bushels per acre, whereas in the same field the same variety yielded 353 bushels marketable potatoes per acre when left undug until September 22nd, or in three weeks the crop had increased by 119 bushels per acre of marketable potatoes. Bordeaux Mixture is made in the proportion of 6 pounds Bluestone, 4 pounds lime and 40 gallons of water. Spraying mixtures should be used at the proper time and thoroughly, if good results are to be expected.

Digging and Storing

Potatoes should be dug in dry weather, so that they will be dry when they are taken into the cellar. If they are diseased, the disease will not spread so rapidly among dry potatoes. If the potatoes are known to be diseased in the field, it is best to leave them in the ground as long as possible, so that diseased potatoes may more readily be seen and separated from sound ones before they are taken into the cellar. Potatoes should be stored for best results in a dry, cool, well ventilated cellar and kept at a temperature between 33 degrees F. and 35 degrees F., if possible.

ANALYSIS OF THE WORLD'S GRAIN SITUATION

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[See Statistics, pp. 139-145.]

The purpose of this article is to review the various factors connected with the supply and demand in wheat for the period to elapse before the next harvest in the Northern Hemisphere. This will be supplemented by a few notes on the next harvest.

As it will presently appear, the deficiencies in production in nearly all the importing countries can only be met, and that partially, because of the abundant harvest of the United States and the equally promising crops in India and Argentina.

The tremendous struggle in Europe becomes a factor, not only because of the waste of resources and the withdrawal of men from the cultivation of the land, but it has a still greater immediate effect through the violent disturbances of the ordinary channels of wheat distribution. Through the dislocation of commercial intercourse a great strain is being placed on the sources of supply which remain in commercial touch with the importing countries, with consequent higher freight rates and more serious risks for shipments.

Wheat Requirements

The wheat production in the principal importing countries of Europe compares for two years as follows:—

	1914 Bushels	1913 Bushels
United Kingdom	62,373,000	56,696,000
Italy	169,444,000	214,407,000
France	300,000,000	319,373,000
Spain	120,314,000	112,402,000
Austria-Hungary	193,156,000	227,875,000
Germany	152,000,000	171,077,000
Belgium, Holland, Denmark, Sweden, Switzerland, Portugal, Greece, Norway	48,986,000	49,309,000
Totals	1,046,273,000	1,151,139,000
Decrease	104,866,000	.....

A special reference will be made to Germany and Austria-Hungary later. The official import figures are given below for 1913-14, together with Mr. George Broomhall's estimates of the probable imports for 1914-15. So far as Belgium, Germany and Austria-Hungary are concerned, the estimates are doubtless mere conjecture, as, apart from the grain introduced through the American Committee for the purpose of succoring starving Belgians, it is difficult to ascertain the quantity that may be smuggled into the hostile countries.

	1914–15 Thousands of	1913–14 Bushels
Great Britain	232,000	210,834
France	80,000	54,273
Belgium	24,000	48,588
Holland	24,000	24,778
Denmark	6,400	6,945
Italy	56,000	45,752
Spain	4,000	14,633
Sweden	8,000	7,219
Switzerland	20,000	18,074
Portugal	1,600	6,000
Greece	5,600	9,600
Norway	6,400	4,000
Germany	8,000	65,340
Austria-Hungary	4,000	15,076
Totals	480,000	531,112
Decrease	51,112	.....

Adding the requirements of importing countries outside of Europe, we have the world's comparison of requirements as follows:—

	1914–15 Bushels	1913–14 Bushels
Europe	480,000,000	531,112,000
Ex-Europe (including 12 millions to Australia)	92,000,000	96,000,000
Totals	572,000,000	627,112,000
Decrease	55,112,000	.....

Wheat Supplies

Official estimates of the wheat production for 1914 are available for exporting countries in the Northern Hemisphere as follows:—

	1914 Bushels	1913 Bushels
United States	891,000,000	763,380,000
Canada	158,223,000	231,717,000
Russian Empire	808,764,000	973,832,000
Balkan States	100,466,000	155,843,000
Totals	1,957,098,000	2,124,772,000
Decrease	167,674,000	.....

Taking the actual shipments of wheat during the cereal year ending July 31st, 1914, as a basis of comparison, the relative crops of the two years as shown above would, according to Broomhall, indicate a relative exporting capacity for the present cereal year as follows:—

	Available for Export, 1914-15 Bushels	Actual Export, 1913-14 Bushels
United States.....	240,000,000	159,638,000
Canada.....	75,000,000	135,230,000
Russian Empire...	8,000,000	163,267,000
Balkan States....	16,000,000	60,800,000
Totals.....	339,000,000	518,935,000
Decrease.....	179,935,000	.....

The Russian crop for 1914 shows a decrease of 165,000,000 bushels from the previous year, almost exactly the quantity exported from the previous year's crop, hence it would not seem probable that even in normal conditions Russia would have a material quantity of wheat for export in the current year. The same remark applies practically to the Balkan States which have prohibited export.

Official figures for the crop yields in the Southern Hemisphere are now available for Australia only, where the past season's drought has been particularly disastrous. The harvest is actually proceeding there as well as in Argentine, while in India the harvest will not begin until March next. Broomhall's estimates for the last two countries are here given. It should, however, be remarked that the estimate of the Indian crop at such a distance from harvest time cannot be reliable.

	1914–15 Bushels	1914–13 Bushels
Argentine.....	200,000,000	131,542,000
India.....	376,000,000	314,608,000
Australia.....	25,000,000	113,343,000
Totals.....	601,000,000	559,493,000
Increase	41,507,000	.....

Roughly, the possible exportable surplus from India and the Southern Hemisphere on the basis of the data presented above compares with the actual shipments last season as follows, the figures for 1914-15 being those of Broomhall:—

	Possible Surplus, 1914–15 Bushels	Actual Shipments, 1913–14 Bushels
Argentine.....	120,000,000	44,000,000
India.....	52,000,000	30,000,000
Australia.....	Nil.	66,000,000
Totals.....	172,000,000	140,000,000
Increase.....	32,000,000	.....

From previous statements we get the following showing of possible supplies in comparison with actual shipments last year:—

	Possible Surplus 1914–15 Bushels	Actual Shipments, 1913–14 Bushels
Northern Hemisphere..	339,000,000	518,935,000
India and Southern....	172,000,000	140,000,000
North Africa, Chile, etc.	4,000,000	7,800,000
Totals.....	515,000,000	666,735,000
Decrease.....	151,735,000	.....

The final conclusion of this analysis of supply and requirements, in which the uncertain factors of crops yet to be harvested are resolved in favour of probable full yields, may be thus summarized:—

	Probable 1914–15 Bushels	Actual 1913–14 Bushels
Requirements of importing countries....	572,000,000	627,112,000
Surplus of exporting countries.....	515,000,000	666,735,000

While last season the requirements were a little more than supplied by the actual shipments, this year after assuming that the ungathered crops of the always uncertain wheat area of the Southern Hemisphere, excepting Australia, will produce record high yields, there would still remain an apparent shortage in the world's wheat supply, as measured by normal requirements, of 57,000,000 bushels.

These figures, as shown below, will have to be raised in consequence of a deficiency in the imports of rye.

Unavailable Supplies

This shortage in the world's supply of wheat would be sufficient under normal conditions and distribution to seriously disturb the delicate balance which at

all times exists in the world grain trade and to materially affect wheat prices. Coming as it does coincident with a violent disarrangement of all the current of world commerce, it confronts the grain trade with a situation that involves price potentialities which cannot be measured by any previous experience.

The alignment of nations involved and the theatre of the European war renders unavailable a large part of the present year's wheat supply. Russia and the Balkan States, as appears from previous statements, have practically no grain to spare, and are so situated that their ports are practically closed and must remain so until a completely decisive stage shall have been reached in the conflict.

For all practical purposes the war removes these two surplus producing countries as a factor in the world's wheat supply, so that we have an available supply, as shown above, of only 515,000,000 bushels. The net requirements of Germany and Austria-Hungary under ordinary conditions may be placed approximately at a minimum figure of 85,000,000 bushels, but as the war has isolated both countries so far as outside wheat supplies are concerned, their needs may be ignored —except for the 12,000,000 bushels which Mr. Broomhall allows may be smuggled in—thus reducing the amount necessary to supply world requirements to 572,000,000 bushels. Deducting the available supply, we have, therefore, as shown above, a world shortage of 57,000,000 bushels.

Other Factors

However, rye supplements wheat in Northern Europe, and the annual consumption is very large. Germany, Russia and Hungary are the principal sources of supply, their net shipments to other countries for two years past being:—

	1913–14 Bushels	1912–13 Bushels
Germany.....	24,695,000	23,165,000
Russia.....	28,361,000	17,169,000
Hungary.....	11,410,000	9,353,000
Totals.....	64,466,000	49,687,000

Practically all three countries are now cut off from commercial intercourse with the rest of Europe, and the volume of rye normally used as human food in other European countries, especially in Denmark, Holland and Sweden, must be replaced largely with wheat, of which there will consequently be a deficiency of upwards of 100,000,000 bushels. That is, at least 50,000,000 bushels of wheat will probably be required to take the place of the 64,000,000 bushels of rye which last year was imported for the use chiefly of those neutral countries. This will raise the requirements given above at 572,000,000 to 622,000,000 bushels.

The drawing of millions of men from the farm to the field of battle will of necessity exercise a tremendous influence upon the future as well as the present grain trade. That there has been a heavy loss of area seeded to winter wheat in Europe is certain. In the provinces of France, now the theatre of war, there is ordinarily a wheat acreage of 1,500,000 acres. Unhappy Belgium has neither men nor opportunity to completely seed her field. Prussia, the granary of Germany, as well as Galicia and Poland are in a death struggle between contending hosts, while every important country in Europe by the mobilization of its men leaves only the weaker of the population to struggle with the problem of producing the future food supply.

This all means a still greater wheat shortage in Europe next year, regardless of how soon the war ends, and a still greater dependence upon the wheat fields of those countries which the fortunes of war have not isolated from the world's markets.

The Oats Crop

It has been shown in detail elsewhere that the world's production of oats in 1914 was 465,731,000 bushels less than in 1913, and 33,107,000 less than in 1912.

In Europe, Russia accounts for a shortage of over 200,000,000 bushels, but the balance is pretty evenly distributed. Unfortunately, Canada accounts for nearly 100,000,000 bushels of the deficiency. The American crop is 20,000,000 bushels in excess of last year's but nearly 300,000,000 less than the crop of 1912.

Under ordinary conditions Europe imports from 125,000,000 to 150,000,000 bushels of oats per year, the United Kingdom and France taking more than one-half, then follow in almost the same rank of importance as importers, Italy, Belgium, Switzerland and Holland. In meeting that demand last year Argentine led with a supply of 57,000,000 bushels; then followed Canada and Russia with 34,000,000 each, Germany with 25,000,000 (having harvested an exceptionally large crop), the United States 18,000,000 and Roumania 17,000,000 bushels.

The supply from Russia and the Balkan States is now shut off by reason of the war. The Argentine crop having been severely damaged by frost is only 66,000,000 bushels against 109,000,000 last year, and can spare for this year's export a comparatively small quantity. Not only must Western Europe seek the overseas supply to replace the oats usually secured from Russia and the Balkan States, but an additional supply of coarse grains to take the place of barley and other feed stuffs similarly cut off, and all of which are in shorter supply in the importing countries than the previous year.

It is doubtful whether Canada can spare any considerable quantity from its 1914 crop. The United States and Argentine are the only other possible sources of supply. The United States crop, owing especially to a rather disappointing corn crop, is no larger than is needed for domestic consumption. What there is of the Argentine crop will not be available until late winter or early spring. For the next few months there will naturally be considerable pressure on the United States and Canada to supply the demand.

Other Grains

It is shown elsewhere that the production of barley in 16 countries in 1914 was 118,586,000 bushels less than in the same countries in 1913, and that the rye crop was 70,399,000 bushels less. For barley the United Kingdom will require some 50,000,000 bushels, Holland and France from 8,000,000 to 10,000,000 bushels each. For rye some 25,000,000 bushels will be needed by Holland, Denmark, Sweden and France.

Deprived of the large quantities of both these crops which Russia usually has to spare, the Western European countries will be short of grains imported for feeding animals as well as of those needed for human consumption.

Prospects of Production in the Year 1915

Only limited information has been received in regard to the area seeded this fall to winter crops in Europe. However, the following brief notes, taken chiefly from Mr. George Broomhall's Corn Trade News up to December 15th, will materially aid in forming an opinion as to the future prospects.

In Europe generally the weather conditions in the fall of 1914 were favourable for seeding winter wheat and rye. Cold weather, which at first threatened damage, was succeeded by a period of mild, rainy weather, producing vigorous young plants which are starting the winter under favourable conditions.

In Great Britain the wheat acreage has been increased by 10 per cent. and the young seedings are progressing under satisfactory conditions. It is believed that there will be a greater cultivation than usual of spring wheat, although that is not a favourite crop with the English farmer. In France the Government has been furnishing seed to certain departments that have been devastated by the war, and has generally supervised and aided in the seeding operations. Notwithstanding the lack of labour, soldiers on leave and even women and children have been working in the fields, with the result that there has been sown an area little inferior to that of last year. Mr. Broomhall has received similar advices from all the belligerent countries; but it is appreciated that seeding must have been seriously hampered in the districts where the widely extended armies were operating; and that the fields in Northern France, Belgium, East Prussia, Poland and Galicia, which have already suffered, are likely to suffer further in the near future.

It is to be noted that for Germany, the official November report was decidedly less optimistic than that of the previous

month. The condition of winter wheat was given as 80 per cent. as compared with 82 per cent. last year, while the very important rye crop was only 76 per cent. compared with 84 per cent. last year. Field vermin are said to have infested the fields, and in a large number of cases damaged the young crops. Most of the crops were sown late and might easily suffer severe damage if there should be a period of hard frost without a good snow covering.

The export of sugar having been suspended, beet roots may be used for feeding purposes, but the available labour and other requisite conditions are very unfavourable to that crop, as well as to the potato and rye crops, expecially in East Prussia.

The Balkan States report having done their seeding under favourable conditions on an area about equal to that of the previous year; even a full acreage to some increase has been reported. There has been an increase of one million acres in the area sown to wheat in Italy. In some districts seeding was done during weather which was too dry and the plant suffered at the start, but generally sowing has been completed under good conditions and the wheat plant is strong. The customs duty on the importation of wheat has been suspended and imports which had previously come from Russia are being received freely from the United States and Argentina.

Owing to the inferior quality of the last season's wheat crop in Spain the earlier official estimate of 120,000,000 bushels has had to be discounted, and it is now stated in good authority that the crop is no larger than, even if it is equal to, that of last year, when the importation of some 14,000,000 bushels of wheat was necessary.

In Algeria the normal area has not been seeded owing to lack of labour. In Egypt conditions have been more favourable, especially for the maize crop, for which the prospects are excellent.

In the United States the area sown to winter wheat is 11 per cent. more than the revised estimated area sown in the fall of 1913, equivalent to an increase of 4,135,000 acres, the indicated total area being 41,263,000 acres. The condition of the crop on December 1st was estimated at 88.3 per cent. of the normal, which compared with 97.2 per cent. a year ago and a 10 year average of 90.3 per cent. 88.3 per cent. indicates a yield of 580,000,000 bushels against the actual yield for 1914 of 684,000,000 bushels. The low percentage condition on December 1st was ascribed chiefly to the dry weather and to scattered evidences of ravages of the hessian fly.

In Canada, in the five fall wheat provinces, 1,294,000 acres were sown to winter wheat, compared with 1,184,000 in 1913, representing a net increase of 9.2 per cent. The condition of the crop on October 31st, 1914, was reported for the five provinces as 96.5 per cent. of a standard, which, with average conditions between then and the next harvest, promised a yield per acre of 1.5 per cent. above the average of the past four years.

Conditions in Canada have been particularly favourable for fall ploughing in preparation for the spring crops. It has been ascertained that in Manitoba 92, in Saskatchewan 77, in Alberta 56 per cent. of the fall ploughing was completed by October 31st. The acreage for all Canada was 71, compared with 54 for the previous year and 44 in 1912.

As for the surplus countries just now harvesting their crops, the latest information from Australia is that the production there is likely to fall under the 25,000,000 bushels already estimated, and that, in order to provide for the 40,000,000 odd bushels needed for domestic consumption, imports carrying from 10 to 15 million bushels will be needed, as it is not believed that the stocks carried over from the previous year are large.

In the middle of December, Mr. Broomhall also reduced his previous estimate of the Argentine exportable surplus from 120,000,000 bushels to a quantity varying from 104 to 112 million.

In Russia, there is said to be a slight decline in the area sown to winter wheat due to adverse weather, but this is not of great importance when it is recalled that the Russian spring wheat crop is more than double the winter crop. In the course of

November, according to the Central Statistical Committee, the condition of the crop was superior to satisfactory.

In India the new crop has been seeded under favourable conditions and a large increase in acreage is reported. This is estimated at 31,800,000 acres compared with 27,697,000 acres last year, or a 15% increase. On this basis the crop may be estimated at only 360,000,000 bushels. However, the various vicissitudes to which the crop will be subjected are likely to reduce this estimate before the harvest in March next.

Conclusion

To sum up the situation, so far as the prospects for 1915 are concerned, all indications point to the sowing of a large acreage of winter wheat. In Europe, however, unfavourable conditions are constantly arising and may in many regions develop most disastrously. Considering the enormous size of the armies, the process of destruction and devastation may extend to even a wider area before next harvest, and what has been sown may not be reaped. Besides what will be destroyed, an equally large quantity will be wasted by the armies in the field, all of which will have to be replaced by grain from outside surplus countries.

Next spring the lack of labour, horses and motors will be still more widely felt in Europe, especially in dealing with such hoed crops as potatoes and beet roots. The resulting shortage of food and feed will, in this case, also have to be supplemented by a greater use of wheat. The vicissitudes of weather and field pests which have already reduced the bright prospects at first entertained for the United States crop, as well as for the German crop, may visit other countries quite as severely before harvest.

Even should the world's crops for 1915 —winter as well as spring sown— largely exceed those harvested during 1914, there is bound to be a demand which the supply can scarcely overtake. That demand is bound to be exceptionally large following the next harvest whether the war continues or not, as the old crop will be eaten up clean by the end of the current commercial grain year, with inconsiderable stocks left either in the demand countries or the surplus countries. There is, therefore, a reasonable expectation that remunerative prices will be well maintained, and there is every inducement to the farmers to extend to the utmost in the coming spring the cultivation of wheat. And, as shown elsewhere, the meat situation is such that a more extensive cultivation of the coarser grains and of fodders will also ensure equally large rewards to the live stock farmer. Economic interests therefore unite with patriotic duty in stimulating the agriculturists of Canada to extraordinary productive efforts during the forthcoming season.

PART V.

FARM LABOUR

Many farmers, East, Centre and West, place the lack of suitable or competent labour as the greatest difficulty in increasing farm production. City people, with their interest in humanity and desire to see the basic industry enlarged, point to the large surplus of labourers in the cities and towns and say that surely some method can be devised to place these people on the land where they could be producing food, at least for themselves. Two things should first of all be clearly understood. First, immediate increased production of any considerable extent must come through the forces organized for that purpose, that is, through the farmers now on the land—any attempt at forcing production this year through schemes of government assisted or supervised construction, utilizing large numbers of the unemployed, would be doomed to failure, at least to very doubtful results. Second, inexperienced and wholly untrained men are as unprofitable on the farms as in the factories. Farming is a manufacturing process, and why expect results in food production that would not be looked for in urban industries? The attempt at increasing food production must be based on economical grounds. Cash wages for farm help until recent years were low, and it is taking time to bring the farmers to realize that they must compete with city industries in buying labour. It is easier to move labour from the country to the city than from the city to the country. The social aspects have to be reckoned on as well as the cash paid. Even where there is a surplus of labour in the cities the farmers will find it difficult to draw it to the farms, until stern necessity and abject want drive men to a consideration of their serious situation. First of all, then, the farmers should realize that they must offer wages and home conditions that will be attractive. With present prices of farm products and the prospect of a continuance of strong demand for the same the farmers should be urged to consider the advisability of their being a little more generous in their offers. The whole thing resolves itself into a question of whether it will pay. Food products are the result of labour. If they can secure more effective labour they can produce more. This question then of what they can afford to pay is purely a business proposition. Then, as to the housing. Farmers who have separate houses, cheap but comfortable, with the perquisites of garden, milk etc., as a rule claim that they have no trouble in securing and retaining good help. The providing of homes for the help on the farm will solve, to a very large extent, the labour problem in districts where mixed farming is carried on. This should be urged and urged upon the farmers. Then the farmers say "the help is no good," "the man I got was more bother than worth." Perhaps so he was, —a misfit. He was as much out of place on the farm as he would be in a machine shop. There are two difficulties here—one is the shortage of men skilled in farm work and the other is the lack of machinery or organization in the locating of men. The lack of experienced farm hands is hard to remedy. You cannot order these by mail or turn them out as factory goods. The very thing that causes this demand for more food is using up the old world's supply of farm help, and until the war is over the immigration from abroad will be limited. Many of our home supply have enlisted and gone to the front. What then are we to do? We shall have to depend mainly on the workers now in Canada. The country wants men and the cities have large numbers of unemployed. It is largely, then, a question of getting the men to the work. City and country are equally interested. The farmers who make the most reasonable offers and who provide home accommodation will cer-

tainly get the preference. Why should not the city and the country co-operate?

Appoint a well selected committee composed of both city men and country men to take this matter up. Tabulate carefully the farmers, their offers and their housing conditions. Tabulate carefully the unemployed and those willing to go to the country. Know the man and know the place and make an honest attempt to get the right man into the right place. Too often the man of the country is not represented in such an adjustment, the labourer is just sent to him, dumped off at his gate. The wisdom of having on such a Committee representatives of the farmers themselves,—men who know country conditions and the farmers who hire the men—is overlooked. Men are volunteering to organize to raise money and food to send abroad. Why not volunteer to organize to help produce more food? Perhaps if two or three women interested and experienced in Women's Institute work were placed on such a committee something would be done. They have proven themselves leaders in forward movements. We have said that the supply of experienced help is limited, and therefore there is an urgent appeal to the farmers not to be too exacting. Take hold of this question, discuss it, let city and country co-operate, and above all do not stop with destructive criticism—what we want now, as never before, is constructive work. The country papers can well open up their columns to the farmers to discuss this question, but warn the correspondents that it is constructive not destructive work that helps. It is so easy to grumble. Cheer up, we have a big work to do. The most striking characteristic of Tommy Atkins in the wet and nasty trenches, next to his bravery, is his good humour and his brotherliness. The farmers of Canada and the city men must pull together, and the out-of-work men must not be overlooked any more than the brave Belgians.

Before we reproduce a few of the many clippings let us have a sidelight on the spirit of the men who are fighting for us. They have the heavy end of it, ours is light—all the more reason for our all pulling together—they are fighting for us, let us work for them.

"It used to be class against class, but the partition-walls are being broken down," says the "Church Family News paper." Mr. Will Crooks, the Labor M.P. for Woolwich, in a delightfully humorous recruiting speech the other night, exactly hit off the situation to the great delight of his audience.

"Everyone is in this war," said Mr. Crooks—"the man in the field, the factory, on the railway, in the mine, and the Johnny from Rotten-Row. They are all there. Algy—who said to me, 'Anybody can tell you have not been pwoperly twained; you dwop your h's'; and to whom I retorted, 'Well, that's nothing; you drop your r's,'—is now in the trenches, fighting, giving of his best, side by side with many a pal of ours.

"To a Bethnal-green man alongside him Algy said, 'You know, Tom, I have been to the East-end myself. Oh, yes. I went there and bought a bull-pup. I gave three pounds for it, and when I got home I found it was not worth three shillings.' 'Oh, give us a fag.'

"Algy handed him a cigarette. 'Give us a match.' Algy handed him the match. 'Algy, I was the bloke that done you for that three quid.' There's brotherly love, if you like—cheering each other up in the hour of adversity."

The best possible form of investment for unemployed labour is the tillage of soil which will repay the tiller with a crop sufficient to return the entire investment within a year. And Canada has any quantity of unworked land upon which that labor can be invested. There is only one class of labor as honorable and as indispensable as that of the fighting man in times of war, and that is the labour of the man who provides the food supply. A proper recognition of this fact, and of the supreme dignity and importance of agricultural labour, should help materially in the difficult process of transferring displaced city workers to the fields and pastures.

Canadian farmers and their wives, more particularly their wives, have been

doing a great work for the relief of the starving people of Europe. One township in Western Ontario has contributed a carload of flour. Many other townships have contributed carloads of farm produce of various kinds. The Women's Institutes of the land have probably done more than any other single organization to bring relief to the war-burdened people of the little kingdom of Belgium. For all of this good work, our rural people deserve the thanks of the world.

But while performing a necessary and Christian service for our brethren across the seas, let us not forget that charity begins at home. Owing to the seasonal employment common in rural districts, many who work for us in summer are reduced to actual want in winter. Many cases have come to our attention where farm laborers and their families were living on only two scanty meals a day, and that when all kinds of farm produce was going to waste in farmers' cellars in the neighborhood. The needy ones had themselves partly to blame. They were too independent to apply to their own prosperous neighbours and one-time employers for help. This very independence, however, is a good sign. Such people are worth helping. It may be done tactfully, however, and in a way that will not injure their sensibilities. They can be found in almost any rural section.

And let us not forget that the only true solution is a reorganization of farm management methods that will ensure work for all the help the year round.

There is every indication that a very large number of men will soon be out of employment in cities through the dislocation of industry and the temporary abandonment of large public undertakings on account of the war. At this time it becomes the duty of all classes to help not only the families of those who have gone to the front, but also those who have lost the means of livelihood by reason of the war.

Many of the unemployed have, no doubt, experience in farm work and many of the inexperienced would be willing to learn. Here is an opportunity then for the farmers of this Province to benefit not only themselves but also those out of work. The world's supply of food products will certainly be greatly lessened this coming year, since the nations at war will not be able to produce as much as usual. At this time, therefore, for the farmers to increase the supply of food stuffs would not only be an act of the highest patriotism but also a profitable proposition.

In order, however, to undertake the necessary increase in acreage of cultivated crops it would be necessary to make additional preparations of many kinds on the farms during the winter, spring and summer months, and this can be done only by the employment of extra help, if such can be procured on reasonable terms.

The war has already increased and will continue to increase the demand for all farm products. It has already brought about increased prices for some products and is practically sure to have the effect of making and maintaining the high prices for all farm products that make up the world's supply of food. Farmers know these facts and each in his own way is planning the work for this fall and the coming winter and next autumn, so as to take advantage of them and thereby serve the Empire and themselves at one and the same time.

It is desirable and necessary that much of this unemployed labor should be helping to produce on the farms instead of helping to consume in cities. It is true that for the next three months farm work is slack, but even at that much may be done. These are times of sacrifice. Many farmers who are in comfortable circumstances will make their contribution to the Empire's needs next summer by producing at some profit to themselves as much as their fields are in a condition to produce. The Departments of Agriculture point out that such farmers can also contribute to the national well-being at this time by keeping in their employment during the next three months even at some slight sacrifice to themselves one or two men more than they actually need. The wages need only be nominal—board and a few dollars a month—something to tide these men over until spring and save them from a winter of idleness and want in the cities.

Let every farmer who is in easy circumstances and has already reaped financial advantage from the war, consider this matter, look around his own district and give employment to at least one man more than he would otherwise keep.

Charity can never take the place of work. Its proper place is only with those who can no longer work. The best antidote for the merely unemployed, now standing around in their thousands, is work—work of some kind, even if the wages are below what have heretofore been considered current rates. Idleness is the root of all evil; there is, generally speaking only one end to it, and that is deterioration in health, character, and the drifting into mischief and crime.

The best thing for the city corporations to do is to provide as much work for the unemployed as they can; it is a primary duty they owe to the people of the city. To give employment to one man with a family of little children is to feed the whole family. Thus to employ a thousand men is to relieve 3,000 or 4,000 human beings, and to have something to show for the expenditure. And this is where the farmers may come in and take up their share of the heavy burden imposed on the Empire by this struggle for its very existence and on behalf of the rights and liberties of humanity. They have a patriotic duty to perform as well as their brethren in the city. The bond that binds the farmers and the dwellers in the cities together is an intimate one. If the farmer produces the food products, it is largely the city people that pay him the good prices he is getting for them.

To provide work throughout the year, even during the winter, on farms where help has not been found necessary in previous years is within the power of a very large percentage of Ontario farmers; and to give employment to men out of work at this particular time, is a duty which every farmer who is in a position to do so should feel it incumbent upon him to perform. On most farms there are improvements to be made and operations to be carried on through the winter, in anticipation of the next year which promises to be the greatest year of production ever known in Canada. If the farmer could come to terms with a good man now for all the year round, it would pay him well to do so. He will want help in the spring and throughout the summer and fall. Labor is going to be cheap and it would be possible now to get a man to work on the farm for 12 months for the wages farmers have been paying for years back for only six months. It is not charity these thousands are asking for; it is work; and it is the patriotic duty, under this great stress that has come upon the Empire, for every farmer who can find work to give to provide it and to pay for it, so that the burden may be more evenly distributed and more equably borne.

If the farmers of Ontario are wise they will begin at once to secure help for the farming operations next summer. Capable farm help can be secured at present in limited quantities but next spring will undoubtedly see higher wages for farm help than we have ever experienced in the past. The Ontario Colonization Department is prepared to render assistance to farmers desiring help. The District Representatives are also instructed to give this matter their serious attention.

FLAX FIBRE— EMPIRE'S NEED AND OUR OPPORTUNITY

How to Produce $58.00 per Acre of Exportable Wealth.

By A. L. McCREDIE

Increased production, in order to overcome as far as possible our adverse balance in international trade and to make up for our present inability to borrow money in Europe, depends on how many more acres we can crop this year, and even more vitally on how much more money we can get from abroad, for each acre cultivated. The more the selling value of our products abroad can be enhanced before they leave Canada, therefore, the better our paramount national necessity will be served.

Flax grown for seed only is worth, sold abroad, some $13.00 per acre. Wheat may be expected to yield Canada for each acre some $25.00—no more. Flax, grown for seed and fibre, and properly handled in the separation of the fibre from the straw, may be expected to yield Canada on export, a return of $58.00 at least. Of all our field crops, therefore, flax, with the fibre as the chief product, is the one most worth growing.

Flax straw, when worked up in the small mills near the fields where grown, yields seed; the long fibre from which commercial yarns are spun; and the less valuable tow, which is broken or other short fibres. This flax is made into linens, towels, threads for sewing harness, saddles, shoes, etc., and into a hundred other necessities. The total supplies of both these grades of flax, manufactured in the United Kingdom of Great Britain and Ireland in 1913, was 111,687 tons, and they were worth $23,724,000 to the producers where grown, as dressed for shipment.

Besides the needs of the British people, supplied by this flax when manufactured, Canada obtained $1,547,000 worth of goods, while all the British Empire outside of the British Isles needed and took was $5,746,000 worth. The British industries making these goods also sold to other countries twenty-five million dollars' worth. Britain received, in exchange for these exported goods, other commodities worth $30,000,000, and no less necessary to the country now than in previous years.

Effect of War on Flax Supply

The war has practically wiped out the Empire's flax supply! Belgium exported to Great Britain, in 1913, 14,194 tons of flax and 3,812 tons of tow. In addition, Britain imported $6,000,000 worth of flax yarn, spun in Belgium. This year the whole Belgian export is cancelled. Germany has seized the whole stock of flax fibre, tow, yarns and linen. Moreover, by taking possession also of the straw of the 1913 crop, held in reserve, and of the 1914 crop just harvested as war broke out, and by preventing any sowing of flax in the coming spring, they have put Belgium out of business in flax supply for three years. This means that, each year for three years at least, the British Empire will suffer a shortage of seventeen per cent. of total requirements, no matter when the war may end. This quantity is worth $13,000,000 in normal years.

The most serious loss of flax supply, however, has been that of Russia, which in 1913, as usual, sent 81,000 tons of flax and tow. The Baltic and Black sea routes are both cut off, preventing this year's exports. Russian export cannot be resumed until the Dardanelles are reduced and taken from the Turks. This may occur before need in Britain becomes most acute, but we cannot be sure of that occurring soon. When it does occur, the vast stores of Russian wheat may bring Canadian wheat prices to normal levels, but British flax supplies will still be at least twenty per cent. short of needs.

The third and last source of flax supply is Ireland herself. The 1914 crop is 5,000 tons of flax and 800 tons of tow less than 1913. This further reduces this year's supplies by over four per cent. Next year's Irish supply will of course be increased, but the total increase thus available is small.

Recapitulation of Flax Shortage

Belgian loss, total, flax and tow	18,000	tons
Russian shut out, flax and tow	81,000	"
Total	99,000	"
Total supply used in 1913	112,000	"
Maximum war-caused shortage	83%	
Minimum (Belgian shortage)	17%	

Canada's Opportunity

Canada can grow flax for fibre wherever mixed farming can be carried on. From the days of earliest settlement flax has been grown and home-made into linen along the St. Lawrence and in Western Ontario. In only fourteen Ontario communities in 1904 some 700 tons of fibre were produced; being separated from the straw by antiquated methods which

produced only the lowest commercial grade. Yet this fibre sold for $201.00 per English ton, for an average of four years. A shipment of flax to Belfast, produced by a crude improvement on the old methods at Parkhill, Ont., sold for $240 per ton. Russian flax averaged $202 per ton for the last four years. It is easily seen that Canadian flax can be fitted into the present and future gap in the Empire's supply. The possibility of getting more remunerative prices for our flax by better methods is seen in the average price of Irish flax, which over five years was $325 per ton, while Belgian flax has averaged $405 per ton.

These varying values are due to the methods of separating the flax fibre from the straw. This is a process which is always carried on near the farms growing the flax. In Ireland and Belgium natural conditions and native experience serve producers fairly well. In Russia the cruder process brings in a correspondingly lower return. Nowhere till recently has the scientific system which has built up the creamery and similar industries been applied successfully to flax. We know now, fortunately, on the triple authority of the Flax Supply Association, and the Government of France, and of the York Street Spinning Mills, the largest flax users in the world, that flax can be cheaply produced anywhere it can be grown, to sell profitably at $225 per ton. And it is also certain that Canadian flax, grown in the East or the West, and handled by the new process recommended, could in normal years be sold for $240 to $300 per ton. This process, called the Feuillett, removes all risks of loss in treatment encountered in the present Canadian process.

The average acre of flax grown for fibre, under ordinary market conditions, before the war, with this process used, would yield at least $45.00 worth of fibre, as well as seed worth $13.00, at points of export, making a total "buying power" per acre of $58.00. The corresponding value at export of an average Canadian acre of wheat is not more than $20.00. These figures are for normal years.

War prices for wheat, after the charges for rental, plowing, tilling, etc., are paid, will probably not exceed $7.00 per acre sown. Flax prices for the three years of Belgian shortage, omitting any consideration of the greater Russian shortage, will enable Canadian flax, handled as stated, to bring at least $310 per ton, which figures out a net profit, after paying for rental, tillage, etc., of $14.00 per acre, against $7.00 for wheat. That these figures are reasonable is seen in the present Russian flax price of over $400 per ton, and in the average Irish price of $325.

Thus Canada as a debtor nation can pay abroad with one acre of fibre flax what she would need nearly three acres of wheat to pay. And during the scarcity which is sure for three years at least, that paying power of a flax acre will be at least $69.00, while wheat, so long as war prices hold, offers the lesser paying power abroad of some $26.00. The farmer growing the flax nets double the profit. The difference goes to pay wages of men otherwise unemployable.

The above minimum Empire shortage of flax would require some 75,000 acres to be sown this year, provided the Feuillett system of treating the straw could be installed to handle so much. Here the question of equipment cost enters. It is said that for each 1700 acres grown, plant and working capital, including seed supply and advances to farmers, would require an investment of from $90,000 to $100,000. This investment would yield some $93,000 in swelling our exports at the lowest price to be expected for three years. The added profit to the farmers producing the flax would be $11,900, which amounts to fourteen per cent. on the money invested. The work would in addition employ thirty men steadily, with annual wages of some $25,000. It should be remembered that Canada has hitherto been employing a vast army of men, in constructing the permanent improvements on which we have spent our foreign borrowings of $450,000,000. These men cannot all be employed, under present conditions, but we should employ as many as possible of them. It is preferable to workhouse support.

The following statement of acreage of flax for the past two years shows that what Canada needs is the introduction of

a practicable method of producing fibre; we have the acreage and western farmers are familiar with the growing of the crop for seed.

Area of Flax (mainly for seed)

	1913 acres	1914 acres
Quebec	800	700
Ontario	7,000	5,300
Manitoba	54,000	40,000
Saskatchewan	1,386,000	958,000
Alberta	105,000	80,000
Canada	1,552,800	1,084,000

SUGAR

The Statistical Sugar Trade Journal gives the following statement of the world's sugar crop:—

	1914–15 Tons	1913–14 Tons	1912–13 Tons
Cane Sugar	9,709,000	9,764,329	9,221,650
Beet Sugar—			
Europe	5,700,000	8,185,165	8,341,063
United States.	570,000	655,298	624,064
	15,979,000	18,604,792	18,186,777
Decrease	2,635,792	.....	.....

The following is a statement of the beet sugar production in 1913:—

Germany	2,720,000	tons
Austria-Hungary	1,703,000	"
Russia	1,690,000	"
France	805,000	"
Italy	325,000	"
Belgium	231,000	"
Holland	230,000	"
Spain	168,440	"
Denmark	141,400	"
Sweden	137,067	"
Rumania	34,258	"
	8,185,165	"

This war is being fought in the beet fields of Europe.

There is a shortage of beets also in the United States of ten per cent. It is estimated by the Wall St. Journal that nearly $30,000,000 was paid to beet growers in 1914, mainly in Colorado, Michigan and California.

Beet sugar and cane sugar are identical. They contain no soil material whatever. Like butter, sugar is made up from air and water. Producing these two foods, then, is or should be the highest agricultural art. They represent air, rain, sunshine and labour.

Canada produces about 12,000 tons of sugar from beets and imports 350,000 tons—beet sugar from Europe, cane sugar from the West Indies and South America. We have had three beet sugar factories working, one at Wallaceburg, Ont., one at Berlin, Ont., and one at Raymond, in Southern Alberta. The latter is to be removed to the United States. It costs $30 to $35 an acre to grow beets, nearly all of this cost being for labour. An average crop will bring $60.00 an acre at the factory. The destruction of the Belgian beet fields and the expatriation of the Belgians brings this question up to Canada. Can we utilize the Belgians to grow beets? It looks as though sugar will be a paying crop in 1915. Keep this in mind that for every ton we produce we import thirty tons. Growing sugar is a labour problem.

THE SUGAR BEET INDUSTRY

By C. H. HOUSON, Secretary, Dominion Sugar Co.

A campaign for "More Production" is of vital importance to Canada at this particular time, but it appears to us that an essential feature of this slogan would be, so far as the farmer is concerned, increased production from the same area, rather than increased area devoted to grain crops, etc.

With this idea in mind, so far as we are aware, there is no other crop that has the effect of increasing the yields of the succeeding crops like the sugar beet, and we are confirmed in this belief by the reports of responsible parties who have investigated the situation in Europe, where, as you are no doubt aware, the sugar beet crop has played a most important part during the past sixty or seventy-five years.

In order to grow sugar beets successfully, the ground requires to be carefully prepared for seeding, equally as well as for wheat, but in addition, they require most thorough cultivation during the entire summer, or, until such time as the leaves have grown to such an extent that further cultivation is impossible, without damaging the plants. This thorough cultivation naturally leaves the soil not only free from weeds, but also in excellent condition for the crop that follows, hence the yield of the succeeding crop is invariably greater than had it followed some other crop.

At this point, we do not believe we can do better than repeat extracts from an article which appeared in the "Scientific American" under date of August 17th, 1912, as follows:—

"Germany is the home of the sugar beet industry. It has about 400 sugar factories, with a total average annual production of over 2,500,000 tons of sugar, about one-half of which is exported. Sugar beet growing is the most profitable type of farming followed in Germany, and probably has done more than anything else to bring about the excellent type of intensive farming for which Central Germany is so justly noted. The Province of Saxony is in the heart of the sugar beet growing of Germany, and although it contains less than 10,000 square miles, there are over 200 sugar factories in it. Good sugar beet land is worth $500.00 per acre, and the returns from sugar beet farming are large."

"Germany with its annual export of 1,250,000 tons of sugar,worth $50,000,000, is gaining not only that volume of international trade but it is not losing a penny's worth of plant food from the soil, because sugar is nothing but sunshine, water and carbon dioxide. On the other hand, the United States imports over $100,000,000 of sugar every year, and exports cereals and cereal products to a value of over $130,000,000. These cereals are all rich in the elements of plant food that come from the soil and determine the degree of fertility of the land. These elements, nitrogen, phosphoric acid and potash, have a staple market value at which they are sold in the form of commercial fertilizers. It is a simple matter of calculation to determine what it would cost to replace the plant food that we lose each year through our export of cereals and cereal products, and estimating these on the most conservative basis, it amounts to at least $30,000,000."

"This certainly is wise economics from the standpoint of German agriculture, and so long as Germany can find a market for its sugar, they can well afford to import the grains, mill-feeds and other concentrates, and thus build up their own agriculture, but from the standpoint of the United States, we cannot afford to go on paying out over $180,000,000 per year for sunshine, water and carbon dioxide manufactured into the form of sugar."

We also repeat from a report presented by the Honorable Smoot to the United States Senate at Washington, July 17th, 1911, as follows:—

"One phase of our all too prevalent vulgar boastfulness would be cured if we but realized that Europe, without Russia, ("The Granary of Europe") occupying but 45 per cent. of our surface area, tills double the number of acres of wheat, rye, barley, oats and potatoes that we till, and from that double area devoted to these five crops, their farmers harvest four times the number of bushels that our farmers harvest; that of these five crops, Europe produces more bushels per capita for their 300,000,000 people than we do for our 90,000,000 people, and that during the past 30 years, Europe has increased her acreage yield of these five crops 75 per cent. while we have increased ours but 8 per cent."

"Anybody will admit that it would be desirable to produce at home the $180,000,000 worth of sugar we annually import from foreign countries and our island possessions, and turn this vast sum into the pockets of our own instead of foreign farmers and labourers. That in itself would be a consideration of great economic value to the nation, but it would be small indeed compared to the indirect benefits to be derived if we produced this sugar from beets, the cultivation of which in Germany, in rotation with wheat, rye, barley, oats and potatoes,

has resulted in their farmers securing from the land which they devote to these five crops an excess annual yield worth $900,000,000 more from a like area devoted to the same crops, and if from our total area devoted to these five crops, our farmers secured as great a yield as do the German farmers, our farmers would be richer by $1,400,000,000 a year."

"Last year I visited the 7,000 acre Tachlowic estate at Yeno, 30 kilometres from Prague, Bohemia, one of the Imperial Estates of the Emperor Francis Joseph. Sixty years ago, a beet sugar factory was erected on this estate, and since that time, one-third of its cultivable area has been planted to sugar beets, grown in rotation with other crops. The records of the estate show that for the 60 years since, one-third of the area has been devoted to sugar beets; the remaining two-thirds has produced a greater tonnage of all other crops than did the entire three-thirds for 60 years prior to the construction of the factory, and, in addition to this, the stock-carrying capacity of the estate has been increased 100 per cent."

All of this is aside from the direct profits to be realized by the farmers who grow sugar beets, which is, of course, an item of considerable importance. For instance, out of some 1,200 contractors in 1913, we had in the neighborhood of 250 who realized over $60.00 per acre from their beet crop, after deducting the cost of seed, and freight charges, if any.

The work in connection with the beet crop can be done by contract for $18.00 per acre, so that the above 250 farmers had a net profit of $42.00 per acre and upwards with which to recompense them for their own work and the rental of their land. Or again, we estimate that the entire work in connection with the growing of sugar beets, commencing with the plowing in the fall of the year previous to the delivering of the beets to the factory or shipping point, costs not to exceed $32.00 per acre, so that the 250 farmers above referred to had a profit of $28.00 per acre or upwards for the use of their land. Many of our growers realized over $100.00 per acre; some indeed, reaching as high a figure as $125.00 per acre, or, considerably more than the market value of the land.

We doubt very much whether there is another section of Ontario where the value of farm land has been increased as much as it has in the beet growing territory of Kent County during the past 10 years, and we firmly believe that this can be attributed entirely to the introduction of the beet sugar industry.

Great interest has been extended to the beet sugar industry since the war commenced. England has been importing in former years, in the neighborhood of 2,000,000 tons from Germany, and of course, this source of supply has been entirely cut off. The world's visible supply of sugar is as follows:—

	Tons
Cane sugar for the year 1913, after deducting the low grade British India sugars.....	7,500,000
Beet sugars for the year 1913...	8,800,000
	16,300,000

Now, if the beet sugars from the Continent of Europe are practically cut off, this of itself, will leave a very heavy visible supply shortage. The result will be that if the war continues, England will be compelled to draw upon Cuba and the West India Islands for supplies, which will ultimately lead to higher prices. Both England and France have already drawn on Cuba for a considerable tonnage.

The British West Indies are not a very great factor as regards the production of cane sugar, manufacturing only 122,000 tons for 1913. The United States in 1913, manufactured 655,000 tons of beet sugar; this year their output will not be quite so great on account of the reduction in the tariff there. The amount, however, was sufficiently large to balance prices during the beet campaign, and as soon as operations began, the price of sugar was materially reduced. Shortly after the war commenced, the price advanced in the States to $7.50 per hundred, and as soon as the beet season opened, there was a gradual decline until the price of $5.00 was reached, which was practically the normal price.

We have great faith in the sugar beet industry in Canada, and look for a gradual development of the same, and it is only a matter of time, with fair protection, until Canada can produce her entire consumption of sugar at home.

The question of beet seed supply has been a somewhat critical one, but we are pleased to state that for the past four years we have been experimenting more or less on growing our own seed. The present year we have a very large quantity of stecklings pitted for the winter, and expect to be in position to grow a good proportion of our seed in Canada. This seed has been showing splendid results; in fact the sugar beets from our home grown seed tested higher than the sugar beets from imported seed. Of course we cannot grow this seed as cheaply as they can in Germany, as most of this work is accomplished on the continent by women, who get a very low rate of wage, whereas in Canada, the help employed by us, either growing seed, raising the beets or manufacturing sugar, are all paid a good living wage.

We would also like to dwell a moment on the by-products obtained from the growing and manufacturing of sugar from the beets. This season, we have manufactured in Wallaceburg, 3,400 tons and in Berlin, 1,100 tons of sugar beet meal. It has taken very kindly with the cattle raisers. We could sell several times the amount that is produced. At first we had a great deal of trouble getting this article established with the trade, but for the past few years, it has met with great success.

We are also manufacturing potash, and mother liquor containing both potash and nitrogen. These two articles are in great demand for fertilizer purposes. As the supplies of potash from Germany have been entirely cut off, we are having enormous enquiries for this commodity, and are conserving it for the Canadian trade.

TOO MUCH WHEAT?

C. C. JAMES

The question has been asked many times recently, Is Canada likely to produce too much wheat in 1915? Without any hesitation we may answer NO. Let us give some reasons for our answer.

The wheat crops of Canada and the world were approximately as follows:

	The World	Canada	Per cent.
1913..	4,070,272,000	231,717,000	5.69
1914..	3,906,280,000	158,223,000	4.05

The crop of 1914 fell below that of 1913 by over 73,000,000 bushels, because of unfavorable weather in many districts. There was a drop in the average production per acre from 21.04 bushels in 1913 to 15.37 bushels in 1914.

The crop of 1913 gave the largest average yield in the five years 1910-1914. Weather conditions were very favorable. It is not likely that an average exceeding 21 bushels per acre will be reached in 1915 unless the weather is most favorable and decided general improvement in the preparation of the seed-bed shall be attained.

Now, as to wheat area. Let us look at these figures:

	Area acres	Bus. per acre	Total yield bushels
1910.....	8,863,151	14.89	132,049,000
1911.....	11,100,673	20.80	230,924,000
1912.....	10,996,700	20.38	224,159,000
1913.....	11,015,000	21.04	231,717,000
1914.....	10,293,900	15.37	158,223,000

Note the slight variations in the acreage in the past four years and the large variations in yield per acre. If we could increase the wheat acreage of Canada by twenty-five per cent. we would have approximately 13,000,000 acres, which, with a maximum yield of 21 bushels per acre, would give us 273,000,000 bushels or about 40,000,000 bushels more than our crop of 1913. This implies that in 1915 we must have as favorable weather for sowing, growing and harvesting as in 1913. No one can give us any assurance as to this. Further, will the seed-bed for the crop of 1915 be as well prepared in the attempt to increase acreage as it has been in the past two years? And, further, with the present extraordinary prices for wheat will the farmers be able and be far-seeing enough to save or procure for sowing on this large acreage seed-grain of high

quality? What are the chances that, with a big increase in acreage, the three factors —good seed-bed, good seed, and good weather—shall all be found in co-operation? Even if we should be fortunate enough to produce a bumper crop we would have an increase over 1913 of only one per cent. of the total world's crop and about twenty per cent. of the total imports into Great Britain. Let us place the crops of Canada and the United States side by side:

	1913 bushels	1914 bushels
Canada.....	231,717,000	158,223,000
United States...	763,380,000	891,950,000

See the increase of nearly 130,000,000 bushels in the United States, of which over 75,000,000 bushels was due to a higher average yield, 16.7 bushels per acre in 1914 against 15.2 in 1913.

Now let us look at the wheat crop of the United States. Last year it formed a little over twenty-six per cent. of the world's crop.

	Area acres	Bush. per acre	Total yield bushels
1910.....	45,681,000	13.9	635,121,000
1911.....	49,543,000	12.5	621,338,000
1912.....	45,814,000	15.9	730,267,000
1913.....	50,184,000	15.2	763,380,000
1914.....	53,377,000	16.7	891,950,000

It will be seen that last year the U. S. wheat crop had the largest acreage and the largest average yield in the five years, resulting in by far the largest total yield ever known, a crop nearly six times that of all Canada and 130,000,000 bushels beyond the previous highest record. In 1913 the weather was against U.S. and favorable to Canada: in 1914 the weather was against Canada and favorable to the United States. The U.S. has increased its area of winter wheat by approximately 4,000,000 acres. Looking at the above table what are the chances for a big crop in 1915? Time alone can tell, but the farmers themselves will be surprised if they repeat the story of 1914. (See following article on U. S. Wheat Crop)

The conclusion is that Canada does not as yet control the wheat market of the world to any great extent, and we must greatly increase our yield before we can become a big or controlling factor.

Great Britain has told us that she will probably need every bushel of wheat that we can produce and that she will pay us at prices that should be highly remunerative. In seeking to do our duty to the Empire we must be careful not to sacrifice the end in view by trying to cover too much ground: it will be total yield that will count, millions of bushels not millions of acres. And it will be folly to sell now all the good wheat and sow wheat of poor variety, inferior quality or low vitality.

Good seed and good seed-bed should be our motto, and we shall trust to Providence for good weather. But we may make the mistake of blaming the weather for much loss that is due to poor farming.

But Great Britain asks us for more than wheat—she asks for oats and beef and dairy products also. If we sacrifice these for wheat, we shall not be doing our full duty to the Empire and shall be injuring ourselves as well. This is not merely a wheat problem, it is a food problem. Britain asks us to help feed her people, our people, in 1915 and in 1916. A blind rush into wheat will not serve the great purpose. This problem of food production is a big one, a complicated one, and one of great national importance.

One word more, supposing we do by good farming and through favorable weather, increase our wheat crop, and at the same time do not sacrifice other crops so important as oats and barley and peas and alfalfa and corn (and also maintain our live-stock output), and then should find that the big prices do not come, that we shall get less than a dollar a bushel—what then? Shall we blame ourselves, or blame the governments? Surely it will be something to contribute to the British Empire in this crisis not only food but cheap food. The average prices received by the farmers of Canada 1910-1913 were as follows:

1910.....75 cents per bushel
1911.....64 cents per bushel
1912.....62 cents per bushel
1913.....67 cents per bushel

We shall certainly do much better than the above, probably very much better, but if we do not get from a dollar to a dollar and a half let us not be disappointed —our duty is to provide the food as

extensively as possible, as economically as possible and as cheerfully as possible—let it be a case of **"Patriotism and Production."**

UNITED STATES' WHEAT CROP

The Grain Expert of the "Saturday Evening Post"

Chicago, December 18.—This week's two reports of the Agricultural Department throw light in two directions on one of the most interesting phases of the present situation—this country's powerful position in the grain trade of the world. Tuesday's estimate gave the final figures of this most remarkable year; Thursday's gave the first indication of the next year's wheat crop.

The estimate of condition and acreage for the newly planted winter wheat crop was a matter of large interest, because of the feeling that the world, under present war conditions, will be ready to take, at remunerative prices, all the wheat that the United States can raise and spare. The Government's figures give food both for re-assurance and disappointment. The crop's condition is the lowest of any December since 1911, 9 per cent. under last December, and nearly 2 per cent. below the ten-year average. Yet, on the other hand, the planted area is 11⅛ per cent. greater than a year ago, and 20¾ per cent. above any previous planting.

On the basis of 19 bushels average yield per acre, there are statisticians here who figure that the higher acreage so far offsets the lower condition as to indicate a yield of 689,000,000 bushels, as against 690,000,000 this past season. But "December forecasts" are a notoriously dangerous reliance, and the fall in the crop's condition percentage in Kansas to 80, as against 100 last December, inspires some caution. As a general rule, the grain trade is inclined to regard the outlook for the next winter wheat crop as decidedly poorer than a year ago. The immense crop of this year (1914) is, in fact, looked upon as in the nature of an accident, and its duplication is not considered probable for 1915.

Even if our own crop were to fulfil the tentative estimate just cited, it does not seem possible for the world's wheat crop of 1915 to equal that of 1914—though this year's total, despite the huge American harvest, fell 386,000,000 bushels short of 1913. The new acreage in France, Germany, Austria-Hungary, Belgium, and the Balkan States, also in Holland and parts of Russia, are almost sure to be greatly reduced, as a result of the drafting of able-bodied farm workmen into the various armies, and, in the case of France, Belgium, and Poland, as a result of continuous warfare on the very ground where the new crop would normally be planted. The Balkan states in 1913, despite continuance of their savage war well into the crop season, produced unexpectedly large harvests; yet the decrease from the previous year in the yield of Bulgaria, Servia, and Greece was something like 20 per cent., while neighboring countries which were not at war showed little change.

Thus the Government's other estimate on our own actual harvest of 1914, came on a very remarkable situation. On the basis of its figures for this year's wheat crop and the "carry-over" from 1913, and taking into account the wheat exported and sold for export, there would be only 82,000,000 bushels left from our own crop for the balance of the season—which is very small. Australia's crop is short; she will have to import about 8,000,000 bushels, against exports of 68,000,000 last season. Argentina's crop is large, but the combined Argentine and Australian crops this year are only about 38,000,000 bushels above last year. Canada will be cleaned out of wheat, in all probability, at the end of this present season.

So that this is the interesting situation which appears to be ahead of us. If this country's wheat crop of 1915 were to turn out one of only moderate dimensions, the world might have to pass through a season of excessively high grain prices, But if our harvest—after a December condition estimate which is, after all, far better than that which preceded the then very large wheat yield of 1912—should once more be abundant, we should in all probability repeat the remarkable achievements of this year's grain market.

THE WORLD'S WHEAT

By CHARLES M. DAUGHERTY,
Statistical Scientist, U. S. Department of Agriculture

U.S. Farmers' Bulletin, No. 641, Nov. 23rd, 1914.

As a result of the war in Europe, a world-wide tendency exists to increase the acreage of wheat for the 1915 harvest. If prevailing sentiment should be realized, doubtless the most extensive area in the history of the world will be seeded during the present autumn and coming spring. The tendency is universal. A prospective heavy demand for this important food grain by the importing countries of Western Europe is likely, if seeding conditions favor, to give extraordinary stimulus to sowings of both winter and spring varieties in the two great exporting countries of North America, and to those sowings now being finished under auspicious circumstances in British India. In the southern hemisphere seeding was completed before the war began, and the effect of present economic conditions upon extension of areas there will be manifest only in the spring and summer of 1915. It is pertinent to note, however, that the extent of land now under wheat in the Argentine for the approaching mid-winter harvest is, owing to a wet seed-time, 761,000 acres less than that of last year, and that the growing Australian crop has been so reduced by drought that there will be little or none for export. The promise of Argentine, notwithstanding the reduced acreage, is for a total yield much in excess of that of last year.

In Europe, where ordinarily over half the world's wheat is produced, the indications are that all available labor resources, in both neutral and contending nations, will be utilized to the utmost for getting in full or increased areas. A wide extension of sowings in some countries is assured. In Italy, whose wheat acreage is ordinarily second in extent to that of no state in Europe, excepting Russia, 1,000,000 acres, it is said, will be added to the crop. In the contending countries reports indicate that, notwithstanding the dearth of customary farm labor caused by the war, extraordinary efforts are being exerted in autumn seeding. The services of women and children, men exempt from military service, refugees, prisoners of war, and soldiers temporarily relieved from the ranks are being utilized in the fields as occasions permit and require. Because of strained labor conditions and of the occupation of certain territory during seed-time by contending troops, some local contractions of area seem inevitable in some of the countries actually engaged in war. The reduction, however, is likely to be compensated by increased sowings in neutral nations; and in Europe, as a whole, no extensive diminution of the wheat acreage seems imminent. The slight decline, as officially returned, in the area sown to winter wheat in Russia this fall was due chiefly to adverse weather and is of little significance, since by far the larger proportion of the Russian wheat lands is invariably devoted to the culture of spring wheat.

In Western Europe, particularly in England and France, the autumn sowings of wheat are, from various causes, now somewhat in arrears, but as a large part of these countries is favored with a mild climate, making sowing operations possible at times during the entire winter, little anxiety is expressed over the present delay. Reports from Germany and other countries of Central Europe indicate that seeding operations have been carried on with activity, the chief obstacle contended with having been the disturbed state of labor brought about by war.

Additional reports received during the past month concerning the 1914 world harvest show that the shortages in some countries, as compared with the previous year, were larger than shown in earlier estimates. Though no detailed official figures have been published, the crop of France is stated, on authority of the French Department of Agriculture, to be between 290,000,000 and 300,000,000 bushels, an estimate commonly construed as indicating a probable yield of about 295,000,000 bushels. The Italian crop, according to the final official figures, amounts to 169,000,000 bushels, 3,000,000 bushels less than the preliminary estimate. Prussia reports a yield 17,000,000 bushels

below that of last year, and Rumania returns less than half a crop. A second official estimate on the Canadian crop puts the yield at 158,223,000 bushels, as compared with a previous one of 159,660,000 bushels. Deficient yields, as compared with those of 1913, are also reported from the less important producers, Belgium, Denmark, and Switzerland.

The aggregate shortage of wheat this year, as compared with last, in all countries from which returns have been received up to date, is over 386,000,000 bushels, that in Europe alone amounting to 323,000,000. The complete total from all countries, however, is not yet available.

Below is a statement of yields in all countries from which returns for 1914 have been received. The figures are in all cases official, but final only in a few instances. Those for Russia, however, are estimates based upon the appearance of the fields in early July and are subject to be changed when the final returns are issued in November:

EUROPEAN WHEAT PRODUCTION AND THE WAR

In an article under the above heading, a writer in the "Field" calculates that Germany and Austria-Hungary will require fifty-five million quarters of wheat to feed their populations between now and the next harvest, after taking into account that a large percentage of the common people eat rye. Against that they have the production this autumn as follows: Germany twenty-one millions, Austria-Hungary twenty-five millions, or forty-six millions in all. The two central European Powers were able to keep their enemies at a distance all through harvest, and they may therefore be credited with these forty-six millions in their entirety. Imports of nine millions should therefore suffice, and no urgent import needs will be felt before about ten weeks before the new harvests. This is not, however, a

Wheat Crop of Leading Wheat-producing Countries, 1912-1914

Country	1914	1913	1912
European Countries—	Bushels	Bushels	Bushels
Great Britain	63,005,000	57,146,000	57,598,000
France	295,000,000	321,571,000	336,284,000
Italy	169,442,000	214,405,000	165,720,000
Spain	120,313,000	112,401,000	109,783,000
Switzerland	3,480,000	3,546,000	3,178,000
Belgium	13,973,000	14,769,000	15,348,000
Netherlands	5,413,000	5,081,000	5,604,000
Denmark	4,877,000	6,691,000	5,045,000
Prussia	91,000,000	108,123,000	100,991,000
Hungary	125,000,000	151,348,000	173,328,000
Bulgaria	46,000,000	40,000,000	44,756,000
Rumania	45,000,000	89,000,000	94,000,000
Russia (73 governments)	781,000,000	962,587,000	720,042,000
Total	1,763,503,000	2,086,668,000	1,831,677,000
Non-European Countries—			
United States	891,950,000	763,380,000	730,267,000
Canada	158,223,000	231,717,000	224,159,000
Argentine	*113,904,000	198,414,000	166,190,000
British India	313,040,000	356,864,000	370,515,000
Japan	23,842,000	25,927,000	26,514,000
Australia	*107,052,000	94,880,000	73,894,000
Total	1,608,011,000	1,671,182,000	1,591,539,000
Grand total	3,371,514,000	3,757,850,000	3,423,216,000

*1913–14 crop.

light matter, because, in the first place, sowings will certainly be reduced by the absence of three million men at the front, and because, in the second place, the Allies command all imports whatsoever. Usually the quantity of rye consumed in Central Europe, over and above the home-grown product—that is to say, about eight million quarters—is brought from Russia. A large potato crop may eke out the rye, but men cannot work or fight on potatoes as they can on cereals. Consequently, the Central European Powers have a very urgent reason for finishing the war before May, 1915.

The European Needs

The actual needs of the Allies are stated to be as follows:—(1) The United Kingdom.—A good home crop has reduced import needs to twenty-six millions, and the markets have been so reassured by ten weeks without a wheat ship taken (while twenty of the enemies' have been captured) that war risks have fallen to almost harmless figures, and the wheat average last week did not reach 40s. at a single statute market. There seems little prospect of the loaf exceeding the price of 6d. per quartern this side of Christmas. (2) The French are the greatest users of wheat per head of population in the world, and are credited with using 480 lb. per person. This would come to forty million quarters, and seed may take another four millions. The yield of 1914 is reckoned at 40,610,000 qr., so that imports of 3,390,000 qr. are revealed. France is, however, not only frugal in times of crisis, but having used bread so freely as compared with other peoples, can save 3,390,000 qr. out of forty-four millions without being at all gravely hit. The situation of itself, therefore, would seem to be healthy. Unfortunately, hostile devastation, in addition to the ruin wrought in the Aisne, Marne, Haute-Marne, Nord, Ardennes, Meuse, Meurthe-et-Moselle, and Pas-de-Calais, has not been inconsiderable in the Vosges and the Somme. These ten departments grow eight million quarters of wheat between them, and it is to be feared that the losses cannot be put at less than half the crop. The French import needs will for this cause be at least four millions. (3) Belgium grows two million quarters of wheat and requires six. The wholesale confiscation of the 1914 crop makes it clear that this season the whole six million quarters will be required from abroad. (4) The Serbs are more than self-supporting as wheat growers, and they have thus far been able to protect their own fields. The net result is that the Allies require a grand total of thirty-six million quarters of wheat as imports between now and another harvest. As regards Russia, opinion is more united as to the exportable surplus being not less than twenty and not more than twenty-five million quarters. Of this surplus not a sack has yet been shipped.

The European area outside the war region includes the following countries:—(1) Holland, which has only 650,000 qr. of wheat of its own, and needs to import (trade estimates) four millions; (2) Switzerland, which has only 435,000 qr. of wheat of its own, and needs (official figures) to import 1,565,000 qr.; (3) Italy, which has a very short crop (22,000,000 qr.), and may have to import fully seven millions; (4) the Iberian Peninsula, which has bumper crops, and instead of importing, as usual, 2,500,000 qr., will be able to do with under a million; (5) Bulgaria, which is credited with 2,000,000 qr. available for export, but has not yet sold a single cargo; (6) Greece, whose agriculture is not flourishing, so that imports of half a million are needed; and (7) Turkey, of which we only know that in the worst of years its European provinces are self-supporting, while in good seasons a million quarters may be shipped. We cannot reckon on any shipments this season.

The net result is that the non-war area of Europe has needs of 14,065,000 qr. gross imports, less Bulgaria's 2,000,000 qr., or 12,065,000 qr. in all. The war area's requirements of imports are 9,000,000 qr. for central Europe, and 36,000,000 qr. for the Allies, apart from Russia. This gives a gross need of over fifty-seven millions, and without the aid of Russia the writer does not see very clearly whence this supply is to come.

WHEAT IN GREAT BRITAIN

Lord Milner's idea that the British wheat area can be trebled, we believe will not bear examination. Any increase would be at the expense of one of the other crops, and these require increasing not decreasing in the coming season. It is not likely that valuable permanent grass land will be broken up in any large quantity for the sake of raising high-priced wheat for a single season. In our own country we fear it is hopeless to look for any very great increase in the wheat area, perhaps 500,000 acres or perchance 1,000,000 acres might be added to the 2,000,000 acres normally under the premier cereal, but even that is a good deal to expect.

If the war is going to be a long one, and there is any risk of our losing even temporarily the command of the sea, the policy of the Government should be to aid our farmers to hold their present crop as long as possible and to encourage farmers in Canada, India and later on in Australia to grow as big a crop as possible, at the same time leaving the importing merchant and miller of the United Kingdom every latitude quietly to accumulate an extra reserve of five or six million quarters. This, of course, they will not do if their enterprise is checked by hints in the press or from elsewhere that if prices are raised the authorities may step in and fix an official price. If merchants are to be expected to shoulder the task of assuring the nation's food supply, their enterprise must not be discouraged.

(*Corn Trade News.*)

BRITAIN'S BREAD PROBLEM

By EDWARD BROWN, F.L.S.

War has brought home to the British people with new emphasis their dependence upon imported food supplies. Annually published statistics have been understood by few; the great mass of the people has not been troubled about the matter. The heavy cost of the British Navy has been met willingly from a realization of the fact that the keeping open of trade routes for ships conveying food to England's shores was and is a question of life and death.

In the current year, prior to the outbreak of war, the annual expenditure upon the navy alone was estimated at $250,000,000—say, $5.50 to a unit of population. Some years ago a Royal Commission was appointed to consider the question of supply of food and raw materials in time of war. The principal conclusion was that though an increase of home production was of great importance a supreme navy was the essential factor. Hence the standard of two keels to one—that is, the maintenance of the sea-fighting power of the British Empire at double that of any other nation.

This policy had been abundantly justified. War broke out when the harvest could be safely gathered and when stocks were at their maximum. There was 8.74 per cent. more land in wheat this year than twelve months ago; the yield was greater than the average, and the total crop ten per cent. above that of the previous year.

As a result the Board of Agriculture of Great Britain was able to announce, three days after war was declared, that there was sufficient wheat and flour in

the country to assure five months' supply of breadstuffs. That announcement gave confidence that otherwise might not have been felt. Further, there has been no check to importations, but an increase, as shown by the figures for August and September of 1913 and 1914:

WHEAT AND FLOUR IMPORTS INTO UNITED KINGDOM.

	1913	1914
	Hundredweights	(112 lbs.)
August	10,918,919	10,948,750
September	10,075,655	13,207,261

As a consequence no serious rise in the prices of wheat and of bread has taken place. Average prices of wheat for the first week of September during the last three years have been as follows: 1912, $8.41; 1913, $7.66; 1914, $8.74 a quarter [8 bushels]. Thus this year's advance over 1912 was thirty-three cents a quarter, or four per cent., and over 1913 was $1.08, or twelve and three-quarters per cent., which for war time is remarkable. These advances are mainly due to increased charges for freights and insurance as a result of enhanced risks. Immediate steps were taken by the Government to check speculators holding stocks and forcing up prices, and selling rates of all food supplies are for the present fixed by administrative order.

In the light of what has been stated the important place held by imported supplies of wheat in feeding the British people can be realized. In the cereal year September 1, 1913, to August 31, 1914, these importations were as follows:

	Quarters
Wheat	23,267,175
Wheat flour in equivalent weight of grain	3,654,048
	26,921,223
Estimated production in United Kingdom	7,799,000
Total	34,720,223
	[277,761,784 bushels]

Thus imports and home production were respectively 77.54 and 22.46 per cent., from which is evident that protection of the trade routes is an essential factor. In the last nine months the largest proportion of Britain's wheat imports has been from the United States and Canada, equal to 59.42 per cent. of the whole.

Out of a total area of 76,641,609 acres of land in the United Kingdom, 46,740,904 acres, or slightly more than sixty per cent., are under cultivation. Of the last named, 19,431,716 acres are arable and 27,309,188 acres under grass, the percentages being 41.59 and 58.41 respectively. In 1887 the arable land was 21,177,789 acres. Reduction of grain prices led to considerable areas being laid down in grass.

During the present year the area under wheat has been 1,940,000 acres; barley, 1,904,000 acres; oats, 3,886,000 acres; and potatoes, 1,206,000 acres. Wheat, therefore, has occupied 4.15 per cent. of the cultivated land and 10 per cent. of the arable land. Any immediate increase, therefore, must be at the expense of grass land, as all the other crops on plowed land must be continued.

To grow all the wheat required for the consumption of the United Kingdom would necessitate more than 8,500,000 acres under this crop, or nearly four and a half times as much as during the current year. That such a result could be accomplished is evident. How far it would affect stock breeding, dairying and other branches of agriculture is a question for consideration, nationally and individually, for such a crop as wheat requires the land to be given up to it entirely for the time being. If all the cultivated land in the United Kingdom were arable the proportion in wheat would form only one in a five-course rotation. That fact has to be kept in mind. As a consequence imports, perhaps to a less degree, are essential and must continue.

At the same time much more could be done than at present. In the United Kingdom nearly 30,000,000 acres, or about forty per cent. of the land surface, is uncultivated. More than half of this area is mountain and heath land used for grazing. Other areas are given up primarily to sport. How much of this could be brought into cultivation for wheat growing if effectively colonized is a question that has to be proved. That a considerable proportion could be brought under cultivation and made productive to a much greater extent in one way or another is evident.

To do so would involve many changes, among them a revision of the land system. In another way the available area has been decreased *pro rata* to the population. Within fifty years the number of people in the British Isles has increased nearly fifty-five per cent., which in a country of limited size is a very large advance. This involves the extension of cities and manufacturing areas. With the advance in wealth of all classes the demand upon land for residential purposes has been great. This steady movement has increased the wealth of landowners, but has seriously diminished the productive capacity of the land so far as food is concerned.

Immediately after the outbreak of war an Agricultural Consultative Committee was appointed by the president of the Board of Agriculture. One of the first recommendations made by it was that:

1. The acreage under wheat should be largely increased wherever practicable. In this direction it should not be forgotten that, on clean land and by the aid of suitable artificial manure, good crops of wheat can be obtained in successive years. Attention is drawn to Section 26 of the Agricultural Holdings Act, 1908, which permits any system of cropping subject to the holdings being protected from deterioration.

2. There is much land of a certain class now under grass which would probably pay for breaking up. If this land is scheduled as arable in the farm agreement the tenant has the option of plowing it up. If it is scheduled as grass the Agricultural Consultative Committee suggests co-operation between owner and occupier as to the advisability of breaking up certain fields in view of the national question of increasing home-grown foodstuffs.

It may fairly be anticipated, therefore, that the near future will in one way or another see a marked advance in the area of land given up to wheat growing. No one anticipates that the United Kingdom will ever grow all or nearly all it requires so long as it retains the character of a great industrial and commercial nation. Two issues are involved: First, success in the present conflict must be secured at whatever cost; second, command of the sea is essential to maintenance of Britain's food supplies.

(*The Country Gentleman*, Nov. 21, '14.)

Perhaps clean seed, of strong vitality, will be scarce. It also promises to be expensive. Neither of these conditions should induce any one to hazard dirty or weak seed on his well-prepared fields. The experience of progressive farmers everywhere, and particularly of grain growers who win prizes, proves that it pays to use only choice seed. Special attention this year must be paid to the germination test. Oats and barley are very deceptive in this regard. Wheat will germinate even if considerably frosted, but, as a rule, the germination is slower and not so uniform as in undamaged seed. The resulting plants also are weaker and less able to survive unfavorable conditions after the seed is put in the ground.

Be cautious, therefore, and use only seed that proves itself by a reliable germination test. If your own seed is good make liberal use of the fanning mill to remove dirt and light grains.

WHEAT IN SASKATCHEWAN

HON. W. R. MOTHERWELL.

In the drier portions of Saskatchewan, without a summer fallow, all is uncertain, and crops are at the mercy of the weather from week to week. At least one-third of the cultivated land should be under summer fallow each year. If the condition of the land does not admit of or require light fall plowing, *double disc land that is to be fallowed*, preferably in the fall, or else in the spring before ploughing. Plough the summer fallow early, and aim to complete the ploughing and working down of the summer fallow before June 20th. (June 1st would be better for west of the 3rd Meridian). Harrow the fallow immediately after ploughing if not at the same operation. Use the harrow or cultivator to destroy young weeds and to restore a mulch. Use the harrow more, in preference to purchasing a packer on credit.

In Western Saskatchewan particularly, seed should be put down not only to the moisture, but into it, sufficiently far that it will not dry out before germination ensues. Failure to do this has lost thousands of acres of crop annually. In this portion of the Province where early harvest frosts are seldom experienced and precipitation less, more care also should be taken to not overload the land with seed.

POTATOES

The two greatest potato-growing countries in the world are at war, Germany and Russia. Following these two countries in order of production are Austria-Hungary, France, the United States, Great Britain and Ireland, and Belgium. This common, homely, plebeian product of the soil has contributed to the sustenance of the people, played a most important part in the development of great industries, and to-day forms a most appreciated and necessary part of the soldiers' ration at the front. Without potatoes and sugar beets Germany to-day would probably not be the ambitious, warring nation that she is, for on these two crops, more than any others, she has built up her wonderful agricultural industry which formed the basis on which she constructed her industrial and commercial prosperity. And, strange to say, she owes a debt to France for both of these field crops. Beet sugar was a product of French investigation and necessity in the Napoleonic era, and potatoes as a European food, came into use through Louis XVI.

Germany has utilized potatoes for enriching her light soils, and sugar beets for rendering productive her heavy soils. She annually grows 8,000,000 acres of potatoes, producing over 1,600,000,000 bushels. Russia comes next in production. Thus we see that Germany has a potato crop nearly approaching in area our prairie wheat in Western Canada.

What does she do with it? Twelve per cent. for seed, 40 per cent. for feeding live stock, 28 per cent. for human food, 6 per cent. for alcohol, 4 per cent. for starch, and 10 per cent. for loss and waste.

It is a crop which the old men, the women and the children can grow, and therefore, it may play a very important part in feeding the people during the war, for the Germans have developed to a large extent the processes of evaporating the tubers whereby the food can be concentrated and stored. Even now potato meal is being used for mixing with wheat and rye flour. It is useful for sustaining a people on short rations, but it will not be sufficient to maintain the army fighting in the trenches. As a source of alcohol it may be useful as fuel for motors when petrol gives out. Germany's immense potato crop, with a big surplus over home requirements, must not be overlooked in studying the situation; but it should be remembered that a sustaining ration for

the people at home is one thing and a fighting ration for the soldier in the field or at the front is quite another.

Our first duty, at any cost, is to aid in Great Britain's sustenance and defence, and our next duty, not less important, is to keep the business of the Dominion moving as normally as possible.

While we must lay aside something to pay our share of the cost of the war, we have at our back storehouses of natural wealth scarcely yet touched. As the calamities of Europe place a higher value on our wheat and other exportable crops, so will the same calamities—the result of militarism and conscription—make the peaceful land of Canada more attractive to some of the best people of Europe whose hopes and lands, generation after generation, have been despoiled or devastated by war. At the present instant Canada stands practically immune from the physical menace of war, our fields are giving their wealth to the harvester, and our other resources are yielding their bounty in greater proportions than ever. Wealth production is proceeding, and the opportunities for still greater primary production are not diminishing. This continent, including Canada, will profit largely and speedily by the changes in the world's currents of trade during the war.

CANADA AND THE FOOD SUPPLY

There is a possibility of too much attention being paid to the capture of the trade of the enemy to the neglect of agriculture. To make war on German trade, and to endeavor to secure it, is quite legitimate; but the profits resulting from this will be of relatively little use if the all-important question of maintaining the food supply is overlooked. Already, as a consequence of the outbreak of war, large numbers of men are deprived of their regular employment, and, in place of their remaining idle, these men, or at least those of them who are physically capable, should pay attention to the motto "Back to the Land." The question of the food supply, not only of this country, but of the world, is of vital importance, more especially in regard to corn and cattle. Only a relatively small proportion of the population is engaged in agriculture, the majority being employed in the manufacturing industries. Canada, at least, we feel sure will endeavor to take advantage of the position.

(*London Financial News.*)

FROM THE GERMAN VIEWPOINT

The most important foundation for the successful management of the household affairs of a nation is found in its population, remarks the Potsdamer Chamber of Commerce in Berlin, in a recent statement prepared by the chamber. The following figures show the status and increase of the population of Germany in comparison with other lands:—

	1871	1912	Increase per cent.
Germany.....	40,997,000	66,096,000	61.2
United Kingdom	31,556,000	45,663,000	45.0
France.....	36,190,000	39,602,000	9.4

The raising of important foodstuffs from its own soil has kept pace in Germany with the large increase of its population, as can be seen from the following table:—

Rye—	1880	1912
Amount of crop in 1,000 tons..	4,971	11,598
Average production per hectar (2.4 acres) in tons.....	8.4	18.5
Wheat—		
Amount of crop.....	2,353	4,361
Average production.....	12.4	22.6
Oats—		
Amount of crop.....	4,243	8,520
Average production.....	11.3	19.4
Barley—		
Amount of crop.....	2,150	3,482
Average production.....	13.2	21.8
Potatoes—		
Amount of crop in 1,000 tons...	19,513	50,209
Average production per hectar (2.4 acres) in tons.....	71	150

This great increase in the production of the soil has been attained by an intensive cultivation, by an increased and proper use of artificial manures based on scientific investigations, and by an appropriate selection of the varieties to be planted. Germany is far ahead of other lands in this respect. In 1912 the amount of crop per hectar (2.4 acres) amounted in double hundredweights—100 kilograms—220 pounds as follows:—

	Wheat	Rye	Potatoes
Germany	22.6	18.5	150.3
France	13.8	11.1	96.1
European Russia	6.9	9	81.7

In this comparison, England does not come into consideration, since it obtains its foodstuffs almost exclusively by importations from abroad. Also in other agricultural products, the greater production in Germany per unit of cultivated land, compared with other agrarian countries, is considerable.

The development of live stock breeding in Germany has been very favorable. In 1873 there were 15,777,000 head of cattle and 7,124,000 swine, while in 1912 the numbers were 20,159,000 cattle, and 21,885,000 swine. In addition to the increase in numbers, the milk production and the weight of the animals have improved. Germany shows, accordingly, in comparison with the other large agrarian States of Europe by far the greatest accomplishments in the directions mentioned.

Foreign Trade Development

In mining, the production of coal and brown coal, iron ore and salt comes especially in consideration. The amount of coal, including brown coal, mined in 1885, was 73,675,000 tons, and this had risen to 259,435,000 tons in 1912, while the English production had only increased from 161,909,000 to 264,596,000 tons in the same period. It is well known that Germany has the greatest coal deposits in the world. The output of iron ore amounted in the year 1912 in Germany to 32,692,100, in France to 18,500,000, in England to 14,011,700, and in Sweden to 6,699,000 tons. The salt mining industry of Germany produced in 1912 saleable products of the value of almost 200,000,000 marks, a figure which was reached by no other country.

It is, of course, generally known that the foreign trade of Germany has extraordinarily developed in the last decades. The import and export figures give the following results:—

	In millions of marks	
	Import	Export
1872	3,464.6	2,492.2
1900	5,765.6	4,611.4
1912	10,691.8	8,956.8
1913	10,770.4	10,097.9

The significance of this development appears yet more if we compare the total of import and export of the German special foreign trade with the corresponding figures of other countries; for example, with those of Great Britain and France, in the last 30 years, as given below:—

	In millions of marks	
	1883	1912
Germany's foreign trade	6,492.3	19,648.6
Great Britain's foreign trade	12,279.5	22,850.5
France's foreign trade	6,687.5	11,954.7

FOOD SHORTAGE IN GERMANY

AMSTERDAM, DEC. 21.

The Professors of Economics at the University of Berlin have issued an appeal to the German nation stating that it is the duty of every one to frustrate the plan of the British Government, which hopes that at the end of the harvest year hunger and want will compel Germany to conclude a dishonourable peace. The professors gave the following five counsels for meeting this danger:—

I. Economy in the consumption of all useful articles of diet and careful use of any refuse.

II. Eat war-bread. Potatoes are plentiful in Germany, while the supply of grain for bread can only last out if it is mixed with from 10 to 20 per cent. of potatoes, or if less bread and more potatoes are consumed.

III. Leave white bread for the sick and feeble, and make the most sparing use of cakes and pastry, as Germany lacks one-third of its customary supply of wheat and wheat-flour.

IV. The consumption of meat, lard, and butter must be restricted now, so that people need not suffer from a want of it later. All who can should now lay in for their own use a supply of smoked ham, bacon, sausages, and suet, but not too much at a time.

V. The principal foodstuffs should be potatoes, rye, wheat, oats, buckwheat, vegetables, and fresh and preserved fruit. Sugar may be used in large quantities and is an excellent article of diet and substitute for lard and butter. The use is especially recommended of skim milk and the cheese made from it (Magerkase), which, on account of the albumen which they contain, form an excellent substitute for meat.

"It is not absolute want," says the appeal in conclusion, "but a sense of precaution which dictates the systematic change in the national diet which we recommend."—("The Times," London, Dec. 22).

FERTILIZERS

The following is a statement of the use of artificial fertilizers per acre of cultivated land:—

Belgium	224	lbs.
Holland	180	"
Germany	150	"
Great Britain	70	"
Canada	0.03	"

Germany controls the readily available world supply of potash. Write to the Department of Agriculture, Ottawa, for a copy of an exhaustive study of this question, "Potash in Agriculture," by Dr. F. T. Shutt. The bulletin should be procured and carefully read. We shall make here two extracts dealing with liquid manure and wood ashes.

Manure as a source of Potash

Farm manures are not usually thought of as a source of potash, much to our national loss. We are quite safe in saying that thousands of tons of potash from this source are annually wasted in Canada. With certain minor exceptions, as in the wool of sheep and the milk of dairy cows, practically all the potash in the feeds and fodders consumed by our farm stock is excreted by the kidneys. More than ninety per cent of the total potash excreted by the animal is to be found in the urine, and this in addition to the fact that one-half or more of the total nitrogen excreted is also present in the liquid excreta. It thus comes about that, weight for weight, urine has a greater manurial value than the solid excrement, and this not only by reason of its larger percentages of potash and nitrogen, but because these constituents are in soluble condition and practically at once available for the nutrition of crops.

The evidence is conclusive as to the greater richness of liquid manure in potash. To allow it to be wasted as it is on too many farms to-day is little short of a crime against the land. Its value as a nitrogeneous fertilizer could be emphasized even more strongly than as a source of potash, but our chief object in this article is to call attention to it as the latter. By returning it to the land, practically all the potash taken out of the soil by the growth of our crops could be put back for future use. It will not be found advantageous to run off this liquid manure into cisterns for subsequent application to the land, as is done in many European countries, owing to our rigorous winter and the high price of labour, but we must use a sufficient quantity of absorbent bedding material to hold it with the solid excrement. Straw, preferably cut short, and air-dried peat and muck are excellent absorbents, and they subsequently give up their plant food to swell the amount contained in the excreta, besides giving bulk which will facilitate the more uniform distribution of the resulting manure on the

land. The temporary deprivation caused by the cutting-off of the German supply of potash may teach us the value of the liquid portion of manure.

Wood ashes as a potassic fertilizer

The ashes of wood have long been recognized as a fertilizer of very considerable value, indeed their use in agriculture is historic. In all countries, including Canada, practising agriculture they have been highly prized, especially for clover, grapes and fruit trees and leafy crops generally, on sandy and light loams, and it was only with the advent of the German potash salts that their use fell off, though of course, their production in decreasing quantities of late years, owing to the disappearance of our forests, has been an important factor in making it more and more difficult for the farmer in the older settled districts to obtain them.

They are essentially a potassic fertilizer, ashes of good quality, that is, dry, unmixed with sand, etc., and unleached, containing between 4 per cent. and 6½ per cent. potash—the average potash content being about 5½ per cent.. This potash is in a soluble form and hence immediately available for crop use; moreover the writer considers that it exists in these ashes in a condition (the carbonate) much more favorable for the nutrition of plants than that in the German compounds, and should be worth at least one cent per pound more than in the latter. There is in fact no better potassic fertilizer.

In addition to their potash they contain some 2 per cent. phosphoric acid and from 20 to 30 per cent. carbonate of lime, enhancing their fertilizing value and making them, in a sense, an all-round fertilizer for supplying the mineral elements required by crops. And, further, they correct acidity, a quality detrimental to the thrift of most farm crops.

Naturally, genuine wood ashes are somewhat variable in composition, depending partly on the nature of the wood producing them and partly on the care with which they have been collected and stored. Wilful adulteration of a gross character has been occasionally detected in commercial samples, addition of sand and other inert matter and leaching being the most common forms of adulteration.

There is a general belief that ashes from hardwoods, as a class, are richer in potash than those from softwoods, but our analyses scarcely confirm this impression. As might be expected, woods differ very considerably in their potash content and the ashes of twigs and boughs are much richer than those of trunk wood. Pine and other soft woods as a rule contain less ash than the hard woods and are much lighter in character and it is this latter quality or property, we think, that has given rise to the common belief referred to. According to our results we cannot find that, *weight for weight*, the ashes of soft wood are much, if any, poorer than those from hard woods.

Our advice in these times must, therefore, be to conserve more carefully this home source of potash, not merely collecting the ashes from the house stoves but burning such brush piles, old roots, etc., as may result from the clearing of land, pruning of orchards, etc., and saving the resulting ashes. Storage in a shed or receptacle protected from the weather is essential to prevent deterioration.

From 25 to 50 bushels of wood ashes per acre will furnish from 60 to 120 pounds of potash, the latter an ample dressing for even very light soils. They are not needed on heavy clay loams, indeed their use on such may destroy good tilth and do more harm than good. Their application is best deferred till spring, broadcasting, preferably on a quiet damp day, on the ploughed land and incorporating with a thorough harrowing.

For clover, corn and mangels, they will be found very valuable. Especially are they beneficial for orchards and for grapes on sandy loams. For turnips, mixed with one-third to one-half their weight of bone meal, they have similarly proved advantageous. But, indeed, there are few crops on light and gravelly soils, as also on vegetable loams inclined to be sour, for which wood ashes cannot be employed with profit.

A FEW FACTS ABOUT MANURE

By FRANK T. SHUTT, D.Sc.,
Dominion Chemist

Farm manures constitute one of the most important sources of fertility, and no one who would build up his soil intelligently and economically can ignore the results of investigations which have had for their object the study of their nature and best methods of use. Information regarding manures must always be timely, if only for the reason that on all rationally conducted farms they are produced all the year round. In the following paragraphs we merely state in very concise form some of the more important facts respecting manures; the thoughtful farmer will work out from them the methods of handling and using manure best suited to his conditions and circumstances.

Speaking broadly, the function of manure in the soil may be said to be twofold, the enrichment of the soil in the essential elements of fertility—nitrogen, phosphoric acid and potash, and the furnishing of humus-forming material for the general improvement of tilth.

The plant food contained in manure is that taken from our fields by the growth of our crops, with probably an additional amount from purchased mill feeds; it stands to reason, since the available plant food in soils is not inexhaustible, that if we are to maintain the soil's productiveness we must carefully save and put back into the soil all the manure produced on the farm. And the more we can produce the better, if we would have increased crop yields. The farm's store of manure in some cases might with profit be supplemented by the judicious application of commercial fertilizers, which are to be valued simply for their percentages of plant food, but from an economic standpoint as well as from the very nature of these materials, fertilizers can never be used as a substitute for manure.

Humus is one of the most important constituents of soils. It mellows a soil, makes it warmer and more retentive of moisture, and thus renders it a more fitting and comfortable medium for seed germination and root extension; in a word, it puts a soil in good heart. Manure in furnishing humus-forming material (organic matter) supplies what no commercial fertilizer possesses, no matter how rich it may be in plant food. It is humus that gives "life" to the soil, for it is the material upon which the useful micro-organisms feed, organisms that prepare food for farm crops. It is not wise or right, therefore, to value manure simply and solely from its content of nitrogen, phosphoric acid and potash; it has an additional value for the general improvement of soils that cannot be reduced to dollars and cents—a value unequalled for this purpose by any other material.

Changes which mean decomposition and a certain loss in fertilizing value, begin to take place as soon as manure is voided. It is practically impossible to get manure into the soil, its best storehouse, without some loss; this may be considered inevitable. But there is no necessity for the tremendous losses that undoubtedly occur to-day on many Canadian farms, losses which at a conservative estimate reduce the value of the manure thirty to fifty per cent. These losses are due to fermentation and leaching and take place in the barnyard and manure pile. The losses from excessive fermentation are in nitrogen—the most costly of all the elements of plant food—and in organic matter; those from leaching are chiefly in the

more soluble nitrogen and potash compounds.

It is evident, therefore, that the sooner the manure can be got into the soil the better, unless for some special purpose rotted manure is required. Rotting for several months in large heaps results in very large losses, and especially so when the manure is in loose unprotected piles. If it is impracticable, by reason of the depth of snow, or the condition of the land, to immediately spread the fresh manure, keep the pile compact and moist and do not turn it. These precautions will minimize the losses.

The liquid portion of the manure is by far the more valuable, for it is not only richer in nitrogen and potash than the solid, but these elements are present in a soluble and immediately available condition and can be at once utilized by crops. It is, therefore, the part of wisdom to use sufficient litter in the barns and stables to absorb all the liquid. If the supply of straw is short, sawdust and air-dried peat or muck may be employed as supplemental litter.

The freshest and longest manure should be used on the heavy loams, the oldest on the light and sandy lands. Do not bury the manure too deeply, when plowing it under, 4 or 5 inches is sufficient. Apply it with a manure spreader if at all possible, for this implement saves labor and in spreading the manure uniformly does most efficient work. Use the manure for the hoed crop of the rotation corn or roots, and a top dressing early in the season on an impoverished meadow will not infrequently be found to give a good return.

CATTLE

A comparison of the population with the cattle production in 1900 and in 1913 for the more important countries appeared in a communication to the *International Institute of Agriculture* in January, 1914, as follows:

Country	Population Increase since 1900	Cattle Increase Since 1900	Cattle Decrease Since 1900
France.....	2%	2%	....
Germany.....	16%	4%	....
United Kingdom	10%	4%	....
Austria-Hungary	10%	2%	....
European Russia	14%	....	12%
Canada.....	35%	20%	....
Argentine.....	40%	....	6%
Australia.....	18%	40	....
New Zealand...	30%	16%	....
United States...	24%	....	30%

Mr. J. D. Kennedy, Director of the agricultural extension work at the Iowa Agricultural College, author of this communication, states that "between January, 1907, and January, 1913, the number of beef cattle in the United States decreased by 15,970,000 head, or about 32 per cent. During the same time our population increased about 10,000,000 people. Conditions are going to be worse in the next two or three years. A few weeks' study of any of the stockyards' markets will convince the most optimistic person that there are altogether too many cows, heifers and calves being rushed to market for the future good of the cattle business. It is a most pitiful sight, in the face of the present marked shortage of cattle, to look over the daily receipts of our southern and western markets and find from 15 to 40 per cent. of the animals offered to be good young she stuff, just the kind that are needed for breeding purposes on the farms. This condition of affairs, if continued, can mean but one thing, namely, fewer and fewer cattle in the years to come."

After advocating a more generous use of silage, the writer recommends in conclusion:

"1. There should be some alfalfa grown on every Iowa farm. This is the heaviest yielding, most drought resisting, most palatable and most nutritious crop that can be grown on our farms. No other crop is so valuable in the growing and finishing of baby beef."

"2. The wise farmer will retain his heifer calves for breeding purposes.

Future prices for beef cattle should be as high as or higher than those of the present time; thus it is a short-sighted policy which leads a man to dispose of his breeding stock. This is a time when men should increase, not reduce, their breeding herds."

"3. A man to be successful in any line of work must stay by the job. The fellow who is always changing never makes much progress. This is especially true of the beef business. No man can anticipate the high markets or the low ones, but the man who is always in the business is sure to reap profits when the other fellow is short, that is when the demand is greater than the supply."

With reference to sheep, a survey of the preceding tables discloses some striking decreases since 1900. It is particularly marked for the United States, Russia, Germany and France, and only in a less degree for Great Britain and Ireland, Hungary, Denmark, Sweden, Austria and Switzerland. Argentine is the only country in which there has been a large and well-sustained increase; Australia, although making great strides until 1911, has since retrograded, and it is reported that during the severe drought of the past season (1914) there has been a very considerable destruction of stock of all kinds.

With reference to pigs, except in the United States, where there has been a decrease between 1900 and 1914 of 5,761,000, the situation is more satisfactory from the productive point of view. An examination of the data for the other countries shows that the increases in production are not, as a rule, proportionate to the increases in population except for Germany where, between 1900 and 1913 there has been added 8,852,000, a large proportion of which (3,735,000) having been added from the year 1912 to 1913. This might be to some extent accounted for by the fact that in 1913 there was a record crop of potatoes, which are much used in Germany for feeding swine.

THE HORSE SITUATION IN FRANCE AND BELGIUM

Mr. Gerald Powell, commission agent, formerly of Nogent Le Rotrou, France, and well-known to many importers of Percherons in this country, writes thus to *The Farmer's Advocate:*

"I left France some weeks ago, owing to no business being done in the importing line. Although I had several stallions and mares bought before the war broke out, I could not get permission to ship any of them out of the country. Among the horses I had bought, was "Lagor," the three-year-old grey that won first prize at the big Percheron Show at Nogent Le Rotrou, last July. One was for Messrs. Truman Bros., Bushnell, Illinois. When we shall get permission to export anything one cannot say. Some of the aged Percheron mares were taken for war purposes, but no stallions, and I understand that no mares of any breed will be allowed to leave France for five years hence, but this news is not official."

"As regards stallions they will not be affected by the war, as the Germans never got anywhere near the Perche district. The French Government bought about forty stallions last week for their Government stables. Of course France will not take any of their best pedigreed stock of any breed for war purposes. Nearly all the prominent breeders in the Perche district are on service-militaire, and many of the young ones have been killed in action, amongst them Monsieur Jules Thibault (son-in-law of Monsieur Leon Moulin), well known to Canadian and U.S.A. importers, also Mr. Emile Aveline, of Launay, both of whom were young married men. Of course the country's horse trade will be interrupted for many years to come. In

poor little Belgium, nearly every stallion and mare was taken by the Germans. England is just full of Belgians, and I am continually meeting Belgian breeders and dealers, most of them ruined, their premises burnt to ashes, and no home to go to when all is over. Such is the prospect over here."

A LARGE BUSINESS

"This war is the largest business upon which any nation has ever been engaged. This business is more important than the Reformation, more important than the discovery of America, more important than the discovery of printing."

HILAIRE BELLOC.

CANADIAN ROOT SEEDS

PROF. C. A. ZAVITZ.
ONTARIO AGRICULTURAL COLLEGE.

Among the manifold effects of the great war on enterprise in Canada is the difficulty of procuring certain seeds from abroad. This important subject was dwelt with and a remedy sought in an intersting lecture delivered by Prof. Zavitz at the Guelph Winter Fair.

On the basis of Ontario's field root crops in 1914, Prof. Zavitz figured that in 1915 farmers would require almost 1,000,000 pounds of seed, made up as follows: 304,000 pounds of mangels, 222,500 pounds of sugar beets, 286,100 pounds of turnips and 8,568 pounds of carrots. Formerly most of these seeds have come from England, France and Germany, the home-grown proportion having been very small.

"In each of seven years," said Prof. Zavitz, "mother-roots of mangels, carrots and Swede turnips have been stored in three different ways—namely, in loose piles in a cool root cellar; in sand in a cool root cellar, and in pits in the field. The results would seem to indicate that if a farmer wishes to grow a small quantity of root seed, the mother-plants may be stored in a cool cellar to good advantage. If the object, however, is to grow root seed in a commercial way the mother-plants can probably be kept through the winter in the best condition in properly constructed and well-ventilated pits. Any one of the three methods here indicated, however, might be used satisfactorily. There was the least amount of decay from the mangels which were stored loosely in the cellar, and from the carrots and Swede turnips which were stored in the sand. The roots which were stored in the sand were exceptionally free from mould and were about equal in firmness to the roots which were stored in the pits. The mangels and the carrots gave the greatest percentage of sprout in the spring when stored in the pits, and the turnips when stored in the sand. It should be understood that the roots in all cases were of ordinary size, and were not in the form of stocklings, as frequently used in the production of root seed for commercial purposes."

"In some of the warmer countries the roots are allowed to remain in the land throughout the winter, especially by a slight protection of soil. In the colder climates, however, it is the usual custom to store the roots over winter and to plant them in the field in the spring. Some interesting experiments have been conducted at the college in a comparison of autumn and spring planting of the mother-root. For the autumn planting the land is slightly trenched with the plow about the first week in November, and the roots are planted three feet apart in the rows, the rows being about five feet apart. The roots after being placed are covered with loose, dry straw, after which they are covered with the plow by turning

two furrows on each side of each row. After the land has become slightly frozen, usually about the middle of December, strawy manure to the depth of three or four inches, is placed over the ridges. In the spring, when danger of severe frost is over, the manure and the surface soil is removed from over the roots. This usually takes place early in May. Our experience has been that when roots are planted in this way they will give a considerably larger yield of seed in comparison with similar roots which are planted in the spring when the danger of frost is past."

"For commercial purposes, the plants are usually cut when about two-thirds of the seed has turned brown. The plants are placed in small stooks or stacks and thrashed when dry. In the growing of root seed in a small way the seed may be stripped from the plants, or the plants may be gathered and the seed thrashed with an ordinary grain thrasher. At the college we usually gather the ripe seed early in September, and later in the month secure the seed which matures at a later date. From observations made, it seems very important to collect the seed before it is injured by frost. In 1912 a frost of two degrees was registered before any mangel seed had been gathered. The germination of the seed in that year was exceptionally poor."

Prof. Zavitz stated that the yield per plant in their experiments had been on the average, — mangels 6.6 ounces per plant, carrots approximately 2 ounces, and Swede turnips 4/5 of an ounce.

"It should be understood that for the germination tests a comparatively large amount of seed is used. For the yield of roots per acre, however, the plants are very carefully thinned, so as to enable each plot to contain the same number of plants as each of the other roots."

"Ontario-grown mangel seed has made a comparatively high record in germination. Also the Ontario-grown seed has surpassed the imported seed in yield of roots per acre in the average tests of five years, in which the number of plants used was practically equal."

THE HOME GARDEN

The British Board of Agriculture has advised the householders of Great Britain to utilize every foot of spare land in the planting of gardens for next year, to supply as far as possible their own garden produce. In this way they can assist in relieving any shortage which may develop on account of war conditions.

This suggestion is of equal importance to Canadians. Attached to nearly every home are pieces of ground which at present are merely waste land. With little effort these may be converted into productive gardens. It requires very little space for a garden that, with ordinary care, will supply an average household with vegetables. By cultivating the available ground many Canadian families can reduce their living expenses, and, at the same time, secure vegetables which are absolutely fresh. Further, every extra pound of food produced in this way means an extra pound of surplus food to be sent to Europe. Village, town and city residents can do their share in the greater production movement.

VACANT LOTS AND OUT-OF-WORK

Canadian towns and cities have been growing and extending their limits beyond all demands of population. The result is that in nearly every town and city in Canada there are vacant lots and unoccupied areas. There must be over one hundred thousand acres of unproductive land within the boundaries of our towns and cities. There are now, and

there will be in the summer of 1915, tens of thousands of out-of-work people. Why do not the councils get the use of this land for this summer and grow food—potatoes preferred, and other vegetables (beans, onions, turnips, sugar beets) that are grown with hand labor? This will give work to the unemployed, and produce food. It may not be possible to take the unemployed out of the city to grow wheat, but they can under proper direction be kept at work producing in the city. It is better even than snow-shoveling in winter. Which city will be first?

TORONTO

"I am told that in Detroit all the vacant lots are fenced, ploughed, planted and handed over to workmen who will take good care of them.

As an instance of what can be done in this direction, I bought a vacant lot in Earlscourt, 36 x 132 feet, and grew the following:—

12 bags potatoes
12 vegetable marrows
12 squash
¼ bushel cucumbers
2½ bushels tomatoes
2 rows each of carrots, beets and beans
1 row each of parsnips and turnips
8 rows of cabbage between potatoes
16 hills of corn.

I do all my gardening before 7 a.m. and after 6. p.m. and on Saturday afternoons and holidays.

The happiest life is that which is full of the most agreeable occupation.

Gardening is full of interest and enjoyment provided you go at it with a will, and in the right way; otherwise you meet with disappointment.

Energy and ambition are necessary if you want results. Gardening is infinitely the most absorbing hobby or amusement you can think of.

Knowledge is essential to success. There is no royal road to it. But get up early in the morning, and get busy, noting the mistakes and omissions you made this year and rectifying them the next. The main thing is to grow well what you do grow. You cannot be a baseball fan and a motor car enthusiast as well as a successful gardener."

"GEORGE BALDWIN."

REGINA

"Our method of handling the vacant lots is by a committee of which I am Chairman. Our Secretary finds out from owners if they are reasonably sure that they will not build on their land during the coming season, and whether they are willing to let us have the land for our purposes.

Then we arrange to plough and harrow them. This costs us 90c. per lot. (It costs us much more at first.) We charge $2.50 for the use of a lot, ploughing and harrowing, and we give some flower seeds to be sown in the 10 ft. near the street. We hope to reduce somewhat the fee of $2.50. It is very small considering the results the gardens yield. Some of the lots were very beautiful. We formed a co-operative society among the gardeners and they bought their seeds co-operatively. We carried on a series of lectures and talks on the conditions of success in western gardening. These were held in the school-houses, and were the first social centre work in the school-houses. The meetings were well attended, and the discussions were very interesting. We pay our secretary $50. for his trouble.

We have now 160 lots ready for the spring. We had some city property which is now used by the City for nursery purposes. Next year we expect to add a large number of lots to our list.

We were able to run a small market of our own, co-operatively managed, and this move led, with the co-operation of the ladies' association, to the re-opening of the City market.

My own little 25 foot lot kept our table supplied all summer with abundance of green stuff—lettuce, swiss chard, peas, beans, tomatoes, corn, onions, carrots and potatoes (enough to do us all winter), and cabbages. The soil here is wonderful in its fertility.

We used the newspapers freely. Our Secretary was most indefatigable. The

Chairman and Secretary necessarily do most of the work.

Some of the stores gave plants, tools and special seeds at reduced prices to all who presented one of our cards.

We have decided to recommend all our gardeners who use hotbeds and cold frames to eschew glass, and to use factory cotton instead. It costs less, does not grow so hot during the day nor so cold at night, the plants get more air and are in every way hardier and stand transplanting better. One edge of the factory cotton we tack to the higher side of the frame and the other edge is tacked to a lath or roller. The cotton is in this way easily rolled up and, when spread over the frame, the weight of the roller keeps it in place. Lath may be used as rafters to keep it from sagging during a rain and injuring the plants."

"W. W. ANDREWS."

BEANS

J. O. LAIRD, Blenheim

The fact that beans have been a good price for a number of years, and also that they are of very great food value, should encourage every person who can to grow as large a crop as possible this coming season.

Beans have been most extensively grown in a loamy soil, but of late years it has been found that they will do well even on a fairly heavy clay soil, providing the land is well drained. The heavier land that is intended for beans should be fall ploughed, but land that is of a more loamy nature is as well not ploughed until spring. Sod land with a coating of ten or twelve loads of farmyard manure has been most frequently used for beans. The use of manure just before the bean crop may, however, continue or produce a disease, and, if so, some other system should be practised.

Bean ground that has been fall ploughed should be kept in a fine state of tilth during April and May, in order to kill as many weeds as possible and to retain the soil moisture. If ploughed in the spring, the land should be rolled soon after ploughing, then disked and harrowed, and kept in good condition until planting. The seed should be even in size and free from disease. The amount used is from three pecks to one bushel per acre. The planting may take place between May 28 and June 15. The ground is usually rolled before planting, and the seed planted with the ordinary grain drill, letting only three tubes run on an eleven-tube drill, making the rows 28 inches apart.

The Pea Bean is the standard variety and commands the most uniform price. There are a number of fancy varieties grown, such as the Yellow Eye, Turtle Soup, and Marrow Fat.

Cultivation of the bean crop is, of course, very important. It is a good practice to harrow the beans before they are up. Beans germinate quickly and, under favorable conditions, will be up in four or five days. The weeder is often used before they are large enough to cultivate. Whether the weeder is used or not, the shields on the two-horse cultivator should be raised just slightly off the ground, so that the earth will cover any small weeds near the plants. The beans should be cultivated about every ten days, or after each rain. When the blossoms come out it is best to cease cultivation, as the cultivator will knock off a great many blossoms. If the cultivation has been thorough, not much hand hoeing will be required.

Beans are usually ripe the first or second week of September. A bean-pulling attachment can be placed on the two-horse cultivator which will cut two rows at once. The knives are placed V-shaped, and so put two rows into one. After pulling they are bunched up by hand in some cases, but more frequently a side delivery rake is used. This will rake three or four rows into one. The beans are left to dry for a few days and then turned over, and after another day's drying they are usually ready to take into the barn. A great deal depends on the weather. If the weather is wet, the only way to save the crop is to turn them often, as care must be taken not to draw them in when damp. Each sling load should be mowed when it is put into the mow. It is a good plan to place a big pole across the mow, so that the sling

load will drop on it and be broken up, thus making it much easier to mow away.

As soon as the beans are harvested, it requires but a small amount of work to make the land ready for fall wheat.

As a rule, the yield varies greatly, some yields being as high as 35 bushels an acre and others as low as 12 bushels. The threshing is not done with an ordinary threshing machine, but with a machine specially constructed, having two cylinders, a slow-moving one and one that runs quickly. The bean straw is very good feed for cattle or sheep, and should be kept in the barn if possible.

Western market prices will not be influenced this year by foreign beans, and for that reason we should produce a bumper crop. The world will need them.

ONIONS

By S. C. JOHNSTON,
Vegetable Specialist, Ontario Dept. of Agriculture.

The onion ranks high in commercial importance among the vegetables grown in Ontario. Next to the potato it is the commonest vegetable in the home. Average prices afford excellent returns for the production of the crop, and, in spite of the fact that Ontario annually produces many thousands of bushels, the imports are very heavy. For this reason an increased production in this crop is warranted.

Soil.—The onion is successfully grown in many soils, and a soil that is not originally conducive to its growth may readily be made productive by the application of manure. Sandy and sandy loam soils are excellent. Black mucks, properly handled, are probably the most favorable soils for onion growing in Ontario. The soil should be rich in vegetable matter, fairly level, well drained and as free as possible from stones. A soil of this nature will produce onions possessing large bulbs of excellent quality.

Manuring and Fertilizing.—Land to produce good crops of onions should be manured heavily, excepting in the case of black mucks. It is a good practice to apply well rotted manure, but this cannot always be secured handily. A sand or sandy loam soil should receive annual applications of from 35 to 50 tons of manure per acre. Black muck soils can be handled satisfactorily with the aid of commercial fertilizers. One consisting of 2% nitrogen, 8% phosphoric acid, 10% potash at rate of from 500 lbs. to 1 ton per acre, supplemented with applications of nitrate of soda used as a top dressing, gives good results. Nitrate should be applied during the growing season at the rate of 150-200 lbs. per acre, spreading it between the rows. Applications should be made several weeks apart.

In some cases, onions are grown on the same soil for many years in succession. Where this is practised, liming the soil once in three years is advisable. From 1000 lbs. to a ton of lime should be applied to the acre either in spring or fall. This applies particularly to muck soils.

Planting.—In Ontario, onions are usually grown from seed. This seed should be of unquestionable quality and germinating value. Seed should be planted in rows 12 to 15 inches apart. Sufficient seed should be used to produce 8 to 10 plants per foot. Extensive growers use from 4½ to 6 lbs. per acre, depending on quality of seed and soil. Seeds should be covered by half an inch of soil in fairly heavy soils and by one inch in light soils. It is imperative that the seed drill be accurately set to sow the seeds as directed.

Cultivation.—If onions are properly drilled in, thinning is unnecessary. Weeds should be kept down by constant cultivation by means of a wheel hoe. Hand weeding will be necessary at least once a season and oftener if the onion land is very weedy. This is an expensive operation, and the freer the soil is from weeds, the cheaper the cost of production. Commence cultivation as soon as the top can be seen.

Harvesting.—Maturity of the crop is indicated by a drying and falling over of the tops. The roots die off at the same time as the tops, and the onion should be pulled when the roots are almost entirely dead. If left in the soil after this period, the onion sends out fresh roots and also starts young growth of the stem inside

the bulb, which causes considerable loss during storage. Onions are usually pulled by hand, four rows being laid in one windrow butt to butt. They should be allowed to dry for from three to six days in this position. After this, it is advisable to take them in slat boxes to a shed. Topping can commence at once, and this should be done by cutting off the top one inch from the bulb, using a sharp knife or a regular onion topping machine, which will handle many bushels per day. The latter machine is recommended where a large acreage is grown.

The onions should then be placed in open slat boxes or on shelves in a building which allows free access of air on all sides. After two or three weeks of curing they are ready for market.

Marketing.—Ontario onions are marketed from Vancouver to Halifax. They are shipped in bags weighing 75 lbs. and holding one bushel and a half. Small quantities are handled on local markets. Grading is necessary to command the top market price. Only by careful topping, grading and shipping will the onion grower build up a business that will net him satisfactory returns. Too often low prices are realized not because of over-production, but owing to immense quantities of inferior quality and grading being dumped on the market.

The following gives approximate yields and prices received at Leamington for last 5 years:

Yield per acre	Aver. price per 75 lb. sack.
1914—300 sacks, 450 bushels	75c.
1913—350 sacks, 520 bushels	$1.25
1912—400 sacks, 600 bushels	25c-60c.*
1911—300 sacks, 450 bushels	90c.-$1.50
1910—375 sasks, 560 bushels	90c.

*Market glutted by U.S. onions.

Storing.—Onions should not be stored for winter keeping in bags or in bulk. They should be kept on shelves or in open slat boxes so that there will be plenty of space for air circulation. If placed on shelves, the layers should not be more than 10 to 12 inches deep. The cellar of the home can be used satisfactorily if it is kept cool. When the crop is large, they should be stored in cool, dry, well ventilated buildings and the temperature should remain as close to freezing as possible. Freezing and thawing will cause the onion to rot.

Cost of Production.—One grower in the Leamington district produces a first class crop at less than $60 per acre while for others the cost averages about $100 per acre. Much depends on the management of the crop and the machinery and buildings used for harvesting and storing.

Varieties.—From Seed: Southport Yellow Globe—rapidly becoming a favorite; good yielder and shipper. Danvers Yellow Globe — a standard variety, but inclined to break in shape; good yielder and shipper. Red Wethersfield—a standard flat red onion, grown particularly for French markets; excellent yielder and shipper. Red Globe—coming more into favor; good shipper.

Sets.—Yellow Strasburg,—solid sets; good keepers.

Three things are necessary to grow a full crop of onions—(1) Abundance of available plant food. (2) Deep and thorough preparation of the ground, which must be pulverized into the very finest condition. (3) Clean culture throughout the season; never let weeds get a start.

The extra work and loss incurred through delaying to cultivate and weed is greater with onions than with any other crop.

Hand-weeding is usually delayed longer than it should be, with disastrous results.

Do not expect to grow a big crop of onions on a half starved soil. They will pay, and pay well, if only you give them enough food.

If you put on a lot of green, strawy, weed-seedy manure, you will rue it all summer long.

The manure should be two or three inches thick over every square foot of the patch. If lumpy it should be broken up before ploughing.

The best way is to plough once deep, then spread the manure, and cross-plough, just deep enough to get it nicely turned under, or work it in with a disc-harrow.

—From "The Country Gentleman."

PART VI

FEEDING THE FIGHTERS

Our soldiers fighting at the front must be fed. "An army fights on its stomach." Their families waiting and watching at home must be fed. The reserves in camp must be fed. The sailors on the high seas must be fed. The industrial workers of Great Britain must be fed. The Belgian refugees must be fed. Who will provide the food, who will produce it? The appeal comes to Canada. Shall we do our share? Our best will not be too much.

Here is the British soldiers daily ration:

1¼ lb. of fresh meat, or
1 lb. of canned meat
One-quarter pound of bacon
1¼ lb. bread
3 oz. of cheese
4 oz. of jam
3 oz. of sugar
½ lb. fresh vegetables, or
2 oz. of evaporated vegetables
⅝ oz. of tea, coffee, or cocoa
2 oz. of tobacco, or
50 cigarettes per week.

Tommy Atkins gets this ration, if, the ration can get to him. Now let us see how this is done.

Getting the Food to the Fighters

With such minuteness of observation as no war before this has ever seen,—from aeroplane, portable watch-towers, and spies everywhere, it is by no means an easy matter to keep the brave fellows entombed in the trenches supplied with food and ammunition.

Here is a vivid account of the manner in which this work is done, by one of the transport drivers at the front.

An inky black night in a rather wild, open country. Lines of waggons stand in readiness to start. To each waggon there are attached a couple of horses—city cab-horses some of 'em.

There is a bugle call; a number of men in the raggiest khaki you could imagine come from out of the darkness at the double. They line up before the waggons, an order is shouted hoarsely, and the men spring to the seats on the waggons and away they go, jolting and rattling across the trampled, wasted corn lying thick and dank on the sodden ground that three months ago was a yellowing cornfield.

The waggons contain bully beef, biscuits, apples, and cold tea in bottles, and the drivers have got to deliver it all somehow to the soldiers in the trenches eleven miles away. The men fight, sleep, eat, live, and die in the trenches, until the moment comes for an advance or retreat. For once entrenched in such a war as the present, there is no coming out day or night. And getting these food waggons to the trenches is perilous work, for the Germans do all they can to prevent the food waggons reaching our soldiers.

The danger of what is called food-transport work is, of course, far greater in some places than others. In some places there may be shelter to be obtained right up to the trenches, and the waggons are never seen by the enemy, but in others the waggons may have to reach the trenches by way of open and difficult ground, over which headway can be made but slowly. Many a driver has perished, many a baggage waggon been destroyed, in such places.

When the waggons are within about four miles of the trenches the Germans try to locate them with searchlights or fireballs, and then begin shelling them. They use fireballs now altogether for this purpose. The fireball is a sort of immense firework. When it bursts it turns into a glaring ball of blue fire which hangs in the air, throwing a brilliant light about the ground beneath it, and enabling the German gunners to get the exact range of the food-waggons.

A comrade of mine saw a shell burst within a foot of a waggon. It simply wiped the waggon and driver and horses out of existence. They were all blown to

smithereens. The waggons, of course, spread out as far as possible from each other and if one or two meet with disaster, some always reach the trenches in safety.

Often the food has to be distributed under shell-fire, but in the trenches one is fairly safe; at any rate, the danger never affects the Tommies' appetites, any more than do his ragged garments, the mud with which he is caked, or the other hundred and one discomforts of living in the trenches.

All sorts and conditions of young men may be found among the food-waggon drivers—from 'Varsity undergraduates to men who, not long since, were clerks in city offices, driving waggons about London, or checking tickets at railway stations—all glad to do their bit, ready to die if necessary doing their duty to their comrades and their country.

LUNCH OR NO LUNCH

A second lieutenant, late of Clare college, pays a tribute to the cheerful manner in which the British soldier faces all hardships. He says:

The men are very good. In comfortable billets with finest cut tobacco and straw, etc., heaps of good food, etc., they grouse all day, but in a clay trench for forty hours in pouring rain, under heavy fire, no matches, very little water or food (not perhaps once in twenty-four hours), they laugh and jibe and sleep, and never a word of grumbling —some of them without greatcoats, too.

The other day we went off at five without our rations or water bottles filled (owing to a mistake), and remained in trenches all day, and then, when it was dark, got bread and cheese and water, and I think it was the best meal I have ever eaten. It is amazing how one can sleep. I have slept often in the day time when they were not attacking, only a heavy artillery duel over our head, wet through and in rain, as well as ever on a spring mattress.

FROM INDIA

The following extracts from the letters of an officer in an Indian regiment at the front were printed in the London Times:—

. . . Am sitting in the bottom of my funkpit (trench) quite cheery and merry and bright. Were up all night being worried by a few odd snipers; and now there is a fellow having pots at our men from about 130 yards away. Must see if I can stop him— and I am thinking of putting out an ambush for him early to-morrow. Have spent a lot of the morning putting a roof over half our trench, both as a protection against shrapnel and to keep us dry. Had lunch off a piece of bread some four days old, and a tin of bully beef, also a pear which the machine-gun men brought from a tree behind the trenches.

Same trench, same spot. . . . We have quite amusing meals. Yesterday they could only get us out a piece of bread about one-third loaf, four dog biscuits, and three potatoes between the pair, However,—— had a little, a very little, bully beef in a tin, mixed up with prunes and an apricot! You should have seen how keenly we chased the last shreds of the meat, which tasted like no beef you've ever had, as it was mostly prune! As —— said, such a collation in ordinary life would have been thrown to the dogs with scorn, and was now received by us more than gratefully, and thought jolly good.

Billets, Nov. 9.—To-day there has been nothing doing, so I went out and collected some blackberries, of which there are still a few on the hedges, kept some for our own lunch and took some round to the brigade. Am going out presently to get a further supply for to-night's dinner. Quite pastoral, isn't it? and within easy shell range of the enemy too!

THE PLUCKY SERBIANS

The following is translated from a letter written by a Serbian soldier, a corporal in the Drina Army Corps:—

War is the hungriest work you could have. If I wanted half as much to eat at home as I do when campaigning, my little bit of land could not support me. We all feel the same, that we must lay up at each meal what will keep us for days, the future being so uncertain. The feats

done for a bit of food are worth telling. When we were in trenches 300 yards or so from the enemy (likewise in trenches) we got lonely for something besides maize, and a few men risked their skins to go foraging in the nearest village. They came back next day with three roast lambs, and in the joy of the feast we forgot precautions. Hitherto we never popped up our heads except to fire, but now we could not resist calling, "Hey, Swabos! See what we have got for breakfast!" and we showed them the roast meat, knowing it would make them wild. They fired a volley at it, breaking it into fragments.

"Thank you for carving it! We had neither knives nor forks, and in return for the service we will share with you," said our corporal. Then we lay low in our trench and ate our fill, throwing the bones to the Swabos and laughing at their shots that went all astray, they were so angry.

Next day we saw boots suspended on sticks outside the Austrian trenches, and a voice called in broken Serbian, "See, you rats! how we are shod and you have not even sound sandals." Then our commander reminded us of all the roast meat we had consumed, and said that on the strength of it we ought to be able to earn a pair of boots, so we charged at a moment when the Swabos least expected it. Sure enough we drove them out and found hundreds of brand new boots, with other things. In that charge I was wounded, but I brought away my boots all the same, and will wear them before long, please God, in another charge.

FROM A CANADIAN

"The regulars, whom we were relieving, were in a terrible state, for the trenches were waist-deep in slush. Our engineer officer gave the platoon leave to dig new trenches for ourselves. The regulars had tried the night before and lost a lot of men. We simply worked like fiends. It was fine during the day, but later the rain came down again, like everything, and we were soaked to the skin. The water rose higher and higher, and we had to stand for twenty-four hours in slush and water which came up over our ankles. It was impossible to feel one's feet, When relieved we had a ten-mile march back to our billets. It was not a march, but a shamble. The march really saved me, as I could not stand when I first got out of the trench. We arrived home at three o'clock in the morning, and just flopped down in our wet things and slept. We had had no sleep for three nights.

THE BASUTOS

Another instance of human nature breaking through the dry crust of official correspondence by telegraph is the letter written by Griffith, Paramount Chief of the Basutos:—

I have the honour to ask your Excellency whether, as my King is engaged in fighting his enemies, I, his servant, would be doing well to keep aloof watching him being attacked by enemies!

Your Excellency, as I am unable to be with my King in person, I beg to know whether I may show my loyalty, and the loyalty of the Basuto to his Majesty, the King, by giving monetary assistance, to be raising by calling upon each Mosuto to pay a sum of (1s.) one shilling; which, when collected, I shall send to your Excellency to be forwarded to his Majesty, the King, as a contribution to the funds now being raised for relief of sufferers by the war.

I shall be glad, your Excellency, if you will kindly reply to this application of mine, as the Basuto and myself are grieved at seeing our King being attacked by enemies when we, his servants, cannot assist him.

PROOFS OF PATRIOTISM

But, dry as is the medium through which they are brought to the notice of the British public, the gifts made by the oversea peoples of the Empire, here recorded, are a magnificent proof of the patriotism that inspires them. Some are the great gifts of great and wealthy people. Of such are the hospital ship presented by the women of Canada to the Admiralty, the £20,000 contributed

by New Zealand to the relief funds, and Australian help for the Belgians. Others are equally notable, but a full catalogue of them all is impossible.

The people of Australia, New Zealand, and Canada, however, would be the first to say that it is not the size of the gift but the spirit of the giver that should be recognized. In that sense the contributions in kind made by the Crown Colonies all over the globe are just as worthy of notice. These colonies have poured into our lap the abundance of such plenty as they have to give. In this list are included the cocoa of Trinidad, the oranges of Jamaica, the arrowroot of St. Vincent, the sugar of Demerara, the guava jelly of Montserrat, the coffee of East Africa, and a hundred other offerings. The gift of a ton of butter by one family in Australia should not be passed over. Other colonies have contributed to the common cause in other ways. They have sent sums collected by public subscription to the Red Cross Fund, or have set themselves, by special appropriations from their revenue, to bear part of the Imperial burden that war must entail.

The whole record of these gifts, in short, is one which shows the unity of Britons settled in every far possession of the Crown. It is the record of a sustained effort to do their utmost for the common cause, and will be read by home-keeping people with a sense of grateful admiration for the spirit that animates the scattered detachments of our race.

HELPING THE BELGIANS

Up to the end of 1914 three ship loads of food and clothing were despatched from Halifax valued at $875,000. The food consisted of potatoes, wheat, flour, cheese, salted meat, salted fish, salmon, dried apples, and canned goods. In addition to the above about $30,000 worth of food and clothing had been shipped from Montreal.

There are probably two million Belgian refugees in Holland, France and Britain, all dependent for food. The four or five millions left in Belgium are in a more less precarious condition. In some parts of Holland the whole people, Hollanders and Belgians, are sharing the limited supplies, their food consisting of rye bread and a bread made of bran and potato flour.

A Whole Nation Starving

John Galsworthy, the English novelist, says that in Belgium there are whole districts utterly without grain, flour, beans, peas, or even salt. For three weeks in Terhaegen there was absolutely nothing edible except potatoes. In Brussels alone 400,000 meals a day are being served; the theoretical price of each meal is one sou and few can pay it. The poor and those who were rich stand side by side waiting the dish that will keep them alive. Women beg at the street corners for a centime (the fifth of a cent). In Antwerp a thousand women, ill-clad, wait shivering in the snow for the hour of the free meal.

Belgian Relief

Capt. Lucey telegraphed from Rotterdam to Mr. Henry Hoover (Chairman of Relief Committee):

"Am making this last appeal to you before your departure from London, and would urge and request upon behalf of Belgian civil population that if the American and other nations are going to even partially relieve suffering and distress of a nation, they must redouble their efforts. We must have a steamship arriving at least every day."

Rev. Archdeacon Cody of Toronto made the following New Year's Appeal:

"A bag of ninety-eight pounds of flour costs $2.25" (to $2.50); "a barrel costs about $5" (to $6.00). "Our railways will send all such contributions free of charge. The Belgian consuls here and in Montreal will, I am sure, be glad to forward these gifts or to use the money sent in for the purpose of buying flour. This is something concrete. It appeals to our imagination as well as to our heart and our pocket. 'A Bag for the Belgians' is a good Christmas war cry. A barrel of flour will make one hundred and eighty loaves of one and one half pounds each. Each loaf should keep a man alive for a day at least. Thus everyone who gives a barrel of flour may keep life in one person for six months."

A Canadian's Appeal

"Her people wander in foreign lands, both the highest and the lowest, looking for work and bread. They cannot look for homes. Those left behind huddle near the ruins of their shattered villages or take refuge in towns which cannot feed their own citizens. Many cities and towns have been completely destroyed. Others, reduced or shattered, struggle in vain to feed their poor and broken populations. Stones and ashes mark the places where small communities lived their peaceful lives before the invasion. The Belgian people live now in the abyss of want and woe."

"I met in Maastricht Belgians, representatives of municipalities, who said they had food for only a fortnight longer—and what was the food they had? No meat, no vegetables, but only one-third of soldiers' rations of bread for each person per day. At Liege, as I write, there is food for only three days. What is it the people of Belgium ask for? They ask for bread and salt—no more—and it is not forthcoming. They do not ask for meat. They cannot get it. They have no fires for cooking, and they do not beg for petrol. Money is of little use to them, because there is no food to be bought with money.

(Sir Gilbert Parker.)

"I came to a fort that had been blown to pieces by shells. A German told me that as his men rushed into the fort, they found it burning, and thought no living being could be in it. Then there came out of a tunnel a black man, stripped of his clothing. Behind him came two hundred others, all hairless and black and naked. Some were blind, all were deaf, most of them were insane."

(Irvin S. Cobb.)

King Albert's Message

December 14th, 1914.

"Consul General of Belgium,
Ottawa."

"His Majesty has learned with a deep sense of gratitude of the practical sympathy of the Canadian people shown in such generous consignments from numerous committees, which will afford invaluable relief for the population of those portions of Belgium which have been so cruelly tried by the occupation of the enemy. I am directed by His Majesty to express, through your intermediary, his personal thanks to all the generous benefactors for the magnificent aid sent from Canada to our unfortunate compatriots."

"(Sgd) Ingenbleek, King's Secretary."

"Never has duty been more clearly and bravely acknowledged, and never has it been more strenuously and heroically discharged, than by the Belgian King and the Belgian people. The Belgians have won for themselves the immortal glory which belongs to a people who prefer freedom to ease, to security, even to life itself."—"Rt. Hon. H. H. Asquith."

We must help feed the Belgians. They are our allies; they fought for us, they are still fighting with us.

The Central Committee of Belgian Relief is located at 59 St. Peter St., Montreal, Que. Write them for circulars and descriptive letters.

Belgian Consuls are located at Ottawa, Montreal, Quebec, St. John, Halifax, Toronto, Winnipeg, Prince Albert, Calgary, Edmonton, Vancouver and Victoria.

PART VII.

CANADIAN CROPS, 1913 AND 1914

(From Reports of the Census Office of Canada)

Estimate of the yield of cereal crops, 1914, compared with final estimate of 1913

Field crops	Area		Yield per acre		Total yield	
	1913	1914	1913	1914	1913	1914
Canada—	acres	acres	bush.	bush.	bush.	bush.
Fall wheat	970,000	973,300	23.29	20.43	22,592,000	19,889,000
Spring wheat	10,045,000	9,320,600	20.81	14.84	209,125,000	138,334,000
All wheat	11,015,000	10,293,900	21.04	15.37	231,717,000	158,223,000
Oats	10,434,000	10,061,500	38.78	30.95	404,669,000	311,426,000
Barley	1,613,000	1,495,600	29.96	23.06	48,319,000	34,591,000
Rye	119,300	111,280	19.28	20.29	2,300,000	2,258,000
Peas	218,980	205,950	18.05	17.17	3,951,800	3,537,100
Beans	46,200	43,830	17.19	18.79	793,300	823,400
Buckwheat	380,700	354,400	21.99	25.84	8,372,000	9,159,000
Flax	1,552,800	1,084,000	11.30	6.95	17,539,000	7,533,000
Mixed grains	473,800	463,300	33.33	35.52	15,792,000	16,458,000
Corn for husking	278,000	256,000	60.30	57.55	16,768,000	14,732,000
Manitoba—						
Fall wheat	19,000	15,000	20.44	21.60	388,000	324,000
Spring wheat	2,785,000	2,601,000	19.01	14.26	52,943,000	37,090,000
All wheat	2,804,000	2,616,000	19.02	14.30	53,331,000	37,414,000
Oats	1,398,000	1,331,000	40.60	26.24	56,759,000	34,925,000
Barley	496,000	468,000	28.84	18.47	14,305,000	8,644,000
Rye	5,000	5,000	20.64	17.33	103,000	87,000
Flax	54,000	40,000	11.70	8.39	632,000	336,000
Mixed grains	1,500	1,490	27.17	21.00	41,000	31,000
Saskatchewan—						
Fall wheat	4,000	4,300	23.57	15.80	94,000	68,000
Spring wheat	5,716,000	5,344,000	21.25	13.74	121,465,000	73,427,000
All wheat	5,720,000	5,348,300	21.35	13.74	121,559,000	73,495,000
Oats	2,755,000	2,520,000	41.42	22.99	114,112,000	57,935,000
Barley	332,000	290,000	31.39	16.15	10,421,000	4,684,000
Rye	3,000	2,600	22.67	20.17	68,000	52,000
Peas	400	400	17.50	25.00	7,000	10,000
Flax	1,386,000	958,000	11.24	6.78	15,579,000	6,495,000
Mixed grains	2,000	1,900	38.40	14.80	77,000	28,000
Alberta—						
Fall wheat	202,000	221,100	21.00	19.23	4,242,000	4,252,000
Spring wheat	1,310,000	1,150,000	23.00	20.19	30,130,000	23,219,000
All wheat	1,512,000	1,371,100	22.73	20.04	34,372,000	27,471,000
Oats	1,639,000	1,502,000	43.65	36.30	71,542,000	54,523,000
Barley	197,000	178,000	32.15	26.30	6,334,000	4,681,000
Rye	16,000	16,400	24.89	27.06	398,000	444,000
Peas	500	470	17.00	15.33	8,500	7,000
Flax	105,000	80,000	11.00	7.67	1,155,000	614,000
Mixed grains	2,000	1,800	36.67	31.67	73,000	57,000

THE HIGH COST OF KILLING

How much does it cost to kill a man in war? The question is answered in the following table:

		Men killed	Cost	Average cost per man killed
French-English	1793	1,900,000	$6,250,000,000	$3,290
Crimean	1854	609,800	1,699,600,000	2,786
United States Civil	1861	494,500	5,000,000,000	10,100
French-German	1871	311,000	2,534,400,000	8,149
Russia-Turkey	1878	180,000	950,000,000	5,277
United States-Spain	1898	20,000	1,165,000,000	58,250
Boer-British	1902	91,000	1,000,100,000	12,089
Russia-Japan	1904	556,000	2,500,000,000	4,496
Balkan War	1913	145,000	200,000,000	1,374
		4,307,800	$21,300,000,000	$4,944

The waste and the loss which the Napoleonic era, including the French revolutionary, directory and consular wars, inflicted on Italy, the Netherlands, the German Kingdoms and principalities, Spain, Portugal and Egypt, have not been estimated; but economically, financially and humanly they must have been enormous. Leroy Beaulieu states that the age of the revolution and the Empire cost France $4,200,000,000; and up to the year 1799 her loss of men amounted to 1,500,000.

FRENCH NATIONAL DEBT.

1852	$1,103,200,000
1871	2,490,800,000
1876	3,981,800,000
1895	5,193,600,000
1906	5,665,134,825

The following table of English wars and debts is significant:—

1756—After French and Indian war	$ 697,500,000
1783—After American revolution	1,190,000,000
1793—After ten years of peace	1,140,000,000
1816—After Napoleonic wars	4,380,000,000

STATISTICS

(Contributed by International Institute Branch, Dept. of Agriculture, Ottawa).

	Population		Area of Ploughable Land	
Countries	Date of Census	Number of People	Date Estimates are made	Area in Acres
Great Britain and Ireland	1911	45,216,665	1910	17,823,000
France	1911	39,601,509	1909	58,544,000
Russia-in-Europe	1910	135,859,400	1910	*240,594,000
Russia-in-Asia	1910	24,889,000	1910	* 30,376,000
Belgium	1910	7,423,784	1895	3,582,000
Serbia	1910	2,911,701	1909	(a) 4,381,000
Germany	1910	64,925,993	1900	63,690,000
Austria	1910	28,567,898	1910	26,301,000
Hungary	1910	20,886,487	1910	35,179,000
Italy	1911	34,686,683	1910	33,815,000
Denmark	1911	2,757,076	1907	6,376,000
Holland	1909	5,858,175	1910	2,185,000
Norway	1910	2,357,790	1907	1,830,000
Sweden	1910	5,522,474	1910	9,007,000
Spain	1910	19,950,817	....	.....
Switzerland	1910	3,753,293	....	.....
Rumania	1912	7,248,061	....	.....
Bulgaria	1910	4,337,513	....	.....
Egypt	1907	11,287,359	....	.....
Canada	1911	7,204,838	....	.....
United States	1910	92,027,874	....	.....
Argentine	1912	7,351,000	....	.....

*Acreage under crops. (a) Acreage under crops and grass.

GREAT BRITAIN AND IRELAND

Territory and Population

Area 121,371 square miles or 76,000,000 acres, of which 17,823,000 acres is arable land, out of a total cultivated area of 46,000,000 acres.

The population at the Census of 1911 was 45,216,665, distributed as follows by occupations of males and females aged 10 years and upwards:

	England and Wales		Scotland		Ireland	
Agriculture and	Males	Females	Males	Females	Males	Females
Fisheries	1,094,765	57,730	196,581	40,730	790,475	85,587
Manufactures	6,326,788	2,023,388	878,446	319,049	406,157	233,256
Commerce	1,779,685	78,769	221,579	24,136	92,863	5,026
Other professions	2,933,021	11,029,698	359,475	1,406,327	910,545	1,934,866
Totals	12,134,259	13,189,585	1,656,081	1,790,242	2,200,040	2,258,735
	PERCENTAGE					
Agriculture and Fisheries	9.02	0.44	11.87	2.27	35.93	3.78
Manufacture	52.14	15.34	53.04	17.82	18.46	10.33
Commerce	14.67	0.59	13.38	1.35	4.22	0.22
Other professions	24.17	83.63	21.71	78.56	41.39	85.67

Production and Trade

1. PRODUCTION OF WHEAT, OATS, BARLEY AND POTATOES IN THE UNITED KINGDOM, 1910–1914

Year	Wheat	Oats	Barley	Potatoes
	Bushels	Bushels	Bushels	Bushels
1910	56,593,000	191,438,000	65,097,000	236,991,000
1911	64,313,000	177,170,000	59,694,000	280,753,000
1912	57,402,000	189,036,000	60,632,000	213,783,000
1913	56,696,000	189,588,000	68,367,000	283,913,000
1914	62,374,000	181,859,000	66,180,000	272,516,000

2. IMPORTS OF CEREALS INTO THE UNITED KINGDOM BY PRINCIPAL COUNTRIES, 1909–1913 (a)

Countries	1909	1910	1911	1912	1913
Wheat*—	Bush.	Bush.	Bush.	Bush.	Bush.
Canada	36,355,243	37,922,175	35,305,491	50,609,141	51,786,915
British India	27,326,195	33,475,947	37,758,722	47,408,065	35,034,053
Australia	19,457,594	25,543,259	27,121,418	24,019,524	19,833,960
New Zealand	1,311,096	1,177,120	1,363,600	531,813	104,907
United States	46,905,088	33,721,820	37,417,996	48,206,355	80,013,879
Argentine	37,625,300	28,508,915	27,758,868	35,322,166	28,055,040
Russia	33,336,479	54,035,606	33,812,126	16,811,381	9,360,400
Chile	3,118,485	1,182,533	210,373	1,224,160	1,428,186
Germany	2,200,811	1,707,306	826,935	1,550,765	2,050,987
France	1,387,701	1,141,995	1,186,937	1,043,394	804,533
Rumania	1,055,921	2,038,618	3,855,331	1,464,400	201,653
Austria-Hungary	279,218	388,099	274,945	301,246	265,843
Turkey	95,915	252,767	776,574	589,505	76,533
Bulgaria	25,926	273,840	119,093	231,093	.....
Other countries	835,354	869,085	1,367,246	1,639,568	563,976
Total	211,316,326	222,239,085	209,154,655	230,952,576	229,580,865

*Including flour expressed in its equivalent of grain.

2. Imports of Cereals into the United Kingdom by Principal Countries, 1909-1913 (a)—Continued

Countries	1909 Bush.	1910 Bush.	1911 Bush.	1912 Bush.	1913 Bush.
Barley—					
Russia	22,788,267	21,545,767	15,564,267	8,551,433	14,245,000
Denmark	121,567	64,167	723,800	985,833	1,213,567
Germany	528,897	738,733	243,600	1,978,947	832,067
Austria-Hungary	910,467	503,300	334,833	504,700	622,533
Rumania	5,337,733	6,770,400	9,288,533	3,714,433	3,240,533
Turkey in Asia	3,934,000	2,930,433	8,516,900	7,920,967	5,208,700
Tunis	1,121,400	129,267	2,117,033	336,467	813,633
United States	6,354,600	4,928,467	7,889,933	1,860,413	10,355,567
Argentine	278,367	23,100	111,300	168,233	617,633
British India	392,933	376,600	5,564,300	15,160,600	8,445,267
Canada	584,967	554,633	101,033	1,166,200	5,977,533
Other countries	7,945,233	4,091,967	6,817,113	4,613,126	786,212
Total	50,298,431	42,656,834	57,272,645	46,961,352	52,358,245
Oats—					
Russia	24,125,459	26,681,365	23,773,976	10,887,718	9,173,459
Germany	7,073,458	9,296,988	5,441,882	6,619,200	11,273,459
Rumania	2,668,235	1,095,294	3,958,871	59,624	2,007,765
United States		365,364	217,534	7,118,259	4,723,814
Chile	1,894,118	1,860,847	1,137,459	2,151,059	2,719,624
Argentine	14,114,965	13,941,365	18,437,506	25,224,706	21,087,953
Canada	429,553	3,213,047	5,801,271	6,466,682	7,734,588
Other countries	8,448,088	1,257,365	1,425,035	1,756,424	1,109,288
Total	58,753,876	57,630,635	60,193,534	60,283,672	59,829,950
Rye—					
All countries	1,350,800	1,648,320	1,750,180	1,536,620	1,811,400

(a) The exports from Canada to Great Britain via the United States are credited to the latter country in these British returns, which according to Canadian returns are considerably too small.

IMPORTS OF WHEAT INTO THE UNITED KINGDOM IN THE CEREAL YEAR, 1913-14.

The extent to which the United Kingdom is dependent on the colonies and foreign countries for grain to supplement the harvest of 1913 was shown, at the end of the cereal year (September 1 to August 31st) in the September 1914 issue of the Journal of the British Board of Agriculture.

The imports of wheat into the United Kingdom amounted to186,137,000 bushels, these being less by 25,867,000 bushels than the imports of 1912-13, and by 6,736,800 bushels than the imports of 1911-12. Converting the imported flour into an equivalent quantity of wheat, the total quantity of imported wheat available for consumption in the United Kingdom was 215,369,784 bushels, compared with 241,195,600 bushels in 1912-13, and 219,467,200 in 1911-12. Similar figures for recent years are given in the following table.

Harvest Year	Home Production Bushels	Imports of wheat during the cereal year, Sept. 1st to Aug. 31st Bushels	Imports of wheat flour in equivalent weight of grain Bushels	Total imported wheat and flour in equivalent weight of grain Bushels	Total quantity available for consumption Bushels
1904–5	39,082,000	196,233,000	28,213,000	224,446,000	263,528,000
1905–6	62,188,000	176,509,000	37,419,000	213,927,000	276,115,000
1906–7	62,481,000	176,841,000	34,276,000	211,117,000	273,598,000
1907–8	58,313,000	170,902,000	34,713,000	205,614,000	263,927,000
1908–9	55,629,000	173,818,000	28,437,000	202,255,000	257,884,000
1909–10	63,196,000	192,792,000	28,012,000	220,805,000	284,011,000
1910–11	56,503,000	188,129,000	26,107,000	214,236,000	270,739,000
1911–12	64,313,000	192,874,000	26,593,000	219,467,000	283,780,000
1912–13	57,402,000	212,005,000	29,191,000	241,196,000	298,598,000
1913–14	56,696,000	186,137,000	29,232,000	215,370,000	272,066,000

The fall in the imports of wheat during the cereal year cannot be ascribed to the outbreak of war, since the imports of August, 1914 (19,271,300 bushels) were above those of August, 1913 (18,913,000 bushels).

The Journal of the British Board of Agriculture for January, 1914 (page 884), makes the following general reference to the food supply for 1913:

The total value of the principal articles of food imported into the United Kingdom in 1913 was £213,976,000, as against £206,090,000 in 1912, £190,690,000 in 1911, and an average of £183,247,000 in the eight years 1903-1910. These figures represent the value (cost, insurance, and freight), as declared to the Customs officers at the port of arrival, of the grain and flour, meat and animals for food, butter, cheese, eggs, condensed milk, fruit and vegetables, hops, lard, and margarine, which may be grouped together as agricultural food products in the sense that they compete more or less directly with the home supply.

The increase in value during the past year as compared with 1912 was mainly due to the increased cost of the meat and animals for food imported, the total value of the items included under this heading amounting to £56,744,000, as compared with £49,080,000 in 1912. The imports of grain and flour showed a decrease, viz. from £88,496,000 in 1912 to £85,528,000 in 1913. On the other hand, the value of the dairy produce (butter, cheese and eggs together) imported was greater than in 1912 by the small figure of £547,000.

MEAT SUPPLIES OF THE BRITISH ISLES.

(Census and Statistics Monthly, October, 1914, pp. 264-267).

Table I shows for the last five years the numbers of cattle, sheep and swine in the United Kingdom. Horses are not included, horseflesh not being a British article of diet.

I. Numbers of Cattle, Sheep and Swine in the United Kingdom, 1909–13

Description	1909	1910	1911	1912	1913
Cattle——	No.	No.	No.	No.	No.
Cows and heifers	4,360,982	4,342,186	4,407,800	4,400,816	4,317,957
Other cattle	7,400,848	7,423,267	7,458,311	7,513,819	7,618,643
Total cattle	11,761,830	11,765,453	11,866,111	11,914,635	11,936,600
Sheep—					
Ewes kept for breeding	12,485,893	12,281,507	11,999,644	11,670,055	11,057,425
Other sheep	19,353,906	18,883,080	18,480,163	17,297,440	16,571,781
Total	31,839,799	31,164,587	30,479,807	28,967,495	27,629,206
Swine	3,543,331	3,561,481	4,250,013	3,992,549	3,305,771

Whilst in this table are included all the farm animals of the United Kingdom, a large proportion of them (including pedigree animals of great value) are breeding stock not under ordinary circumstances available for the butcher. The quantity of the home production of meat in the United Kingdom has been variously estimated; but one of the latest estimates is that of Mr. R. H. Rew, C.B., who, in his paper on the Nation's Food Supply, read before the British Association at Dundee, in 1912, placed the total average annual home production of beef, veal, mutton, lamb and pig meat for the years 1907 to 1911 at 32,771,200 short cwt. and the imports from abroad at 26,040,000 cwt., representing a total annual consumption of meat in the United Kingdom of 58,811,200 cwt. The proportions of home and foreign meat production he placed at 55.7 per cent. for the former and 44.3 per cent. for the latter. The total quoted represents a meat consumption per head in the United Kingdom of about 130 lbs. for a population of 45,369,090. Three years earlier, in 1909, another authority, Mr. R. H. Hooker, in a paper read before the Royal Statistical Society, estimated the meat consumption of the United Kingdom at about 120 lb. per head, his calculations being based upon quinquennial averages from 1895 to 1908.

Table II shows by countries the numbers of live animals imported into the United Kingdom for food during each of the five years 1909-1913.

II. Imports into the United Kingdom of Live Cattle and Sheep by Principal Countries, 1909–1913

Description	1909	1910	1911	1912	1913
	No.	No.	No.	No.	No.
Cattle—					
United States	205,449	138,457	155,817	39,987	10,093
Canada	113,583	78,691	42,239	6,800	1,755
Channel Islands	2,308	2,483	2,342	2,125	2,895
Total	321,340	219,631	200,398	48,912	14,743
Sheep—					
United States	6,583	.....	42,805	14,237	.....
Canada	1,548	427	4,868	1,193	501
Total	8,131	427	47,673	15,430	501

Under British law, live cattle, sheep and pigs may only be imported for slaughter at the port of landing, and owing to the existence of cattle diseases the importation of live animals from the continent of Europe is entirely prohibited. From the table it will be seen that importation into the United Kingdom of live animals from this side has been gradually decreasing, cattle having fallen from 321,340 head in 1909 to 14,743 in 1913, and sheep from 8,131 to 501 in the same years.

We turn now to the sources of the foreign meat supplies of the United Kingdom; and Table III shows, by principal countries, in short cwt., the quantities of the different kinds of dead meat imported during each of the five years 1909-1913. The descriptions include fresh, chilled, frozen, salted and tinned or canned meat. Poultry, rabbits and game are not included, but the value of British imports of these in 1913 was returned as $9,214,381.

III. British Imports of Dead Meat by Principal Countries, 1909–1913

Description	1909 cwt.	1910 cwt.	1911 cwt.	1912 cwt.	1913 cwt.
Beef, fresh—					
Denmark	61,346	47,368	4,620	11,221	340
Other countries	8,457	16,398	5,825	4,207	2,377
Totals	69,803	63,766	10,445	15,428	2,717
Beef, chilled—					
United States	930,372	525,777	189,777	4,784	.....
Argentine	2,045,805	3,036,037	4,203,517	4,335,677	5,841,945
Other countries	7,025	12,963	11,707	1,164	35,820
Totals	2,983,202	3,574,777	4,405,011	4,341,625	5,877,765
Beef, frozen—					
Uruguay	143,275	159,341	73,343	235,472	445,063
Argentine	2,667,328	2,450,697	2,640,823	3,050,608	2,190,555
Australia	458,525	983,885	793,395	999,414	1,509,160
New Zealand	508.892	596,770	287,242	293,141	273,468
Other countries	46,360	28,122	34,176	30,830	8,979
Totals	3,824,380	4,218,815	3,828,979	4,609,465	4,427,225
Beef, salted—					
United States	117,310	89,401	98,741	59,292	52,111
Other countries	5,907	8,752	2,398	1,411	3,703
Totals	123,217	98,153	101,139	60,703	55,814
Beef, preserved—					
Uruguay	120,165	190,197	177,138	202,622	163,243
Argentine	78,083	97,626	236,293	181,297	188,363
Australia	61,620	138,307	241,314	215,952	335,643
Other countries	113,117	82,284	59,490	55,428	38,442
Totals	372,985	508,414	714,235	655,299	725,691
Total beef	7,373,587	8,463,925	9,059,799	9,682,520	11,089,212
Mutton, fresh—					
Netherlands	207,897	156,463	126,992	178,991	137,814
Other countries	8,736	5,058	4,244	3,368	3,343
Totals	216,633	161,521	131,236	182,359	141,157
Mutton, frozen—					
Chile	160,470	135,573	98,767	84,939	179,808
Uruguay	73,226	101,343	77,788	56,549	184,781
Argentine	1,609,860	1,590,011	1,995,914	1,779,904	1,133,829
Australia	1,057,003	1,708,447	1,446,700	1,094,988	1,865,762
New Zealand	2,215,386	2,356,674	2,219,243	2,425,285	2,464,588
Other countries	156	970	30	89	.....
Totals	5,116,101	5,893,018	5,838,442	5,441,754	5,828,768
Mutton, preserved—					
Australia	101,714	121,845	97,672	66,870	49,446
Other countries	38,318	46,482	64,217	70,654	47,124
Totals	140,032	168,327	161,889	137,524	96,570
Total mutton	5,472,766	6,222,866	6,131,567	5,761,637	6,066,495
Pork, fresh—					
Netherlands	423,781	410,141	414,786	295,736	515,224
Other countries	40,499	70,621	34,453	33,323	20,759
Totals	464,280	480,762	449,239	329,059	535,983
Pork, frozen—					
All countries	14,594	56,734	58,044	21,208	17,592

III. British Imports of Dead Meat by Principal Countries, 1909-1913—Con.

Description	1909 cwt.	1910 cwt.	1911 cwt.	1912 cwt.	1913 cwt.
Pork, salted—					
Denmark	176,505	201,475	208,966	185,348	210,030
United States	62,316	43,530	51,261	48,845	47,338
Other countries	50,742	9,449	4,707	4,633	12,100
Totals	289,563	254,454	264,934	238,826	269,468
Bacon—					
Russia	24,920	152,344	197,800	187,629	237,052
Sweden	21,645	27,311	48,923	48,831	69,336
Denmark	2,026,914	2,009,746	2,376,737	2,596,953	2,615,138
Netherlands	117,615	163,803	77,688	7,758	208,044
United States	2,451,739	1,463,752	2,035,975	1,902,149	2,019,776
Canada	496,592	461,367	689,704	433,889	272,745
Other countries	41,094	48,673	26,160	12,982	18,786
Totals	5,180,519	4,326,996	5,452,987	5,190,191	5,440,837
Hams—					
United States	1,202,397	745,668	993,779	918,397	851,835
Canada	60,024	42,136	69,770	83,468	100,892
Other countries	2,091	17,618	5,839	3,756	4,868
Totals	1,264,512	805,422	1,069,388	1,005,621	957,595
Total pig meat	7,213,468	5,924,368	7,294,592	6,784,905	7,221,475
Meat, unenumerated—					
Fresh—					
Netherlands	305,734	274,811	231,471	210,662	229,511
Other countries	32,882	34,956	32,995	31,142	32,106
Totals	338,616	309,767	264,466	241,804	261,617
Frozen—					
United States	117,820	109,844	94,462	90,924	78,109
Argentine	282,381	315,128	374,844	502,843	352,494
Australia	8,399	23,937	44,056	51,815	68,137
Other countries	30,849	33,290	34,027	45,545	55,371
Totals	439,449	482,199	547,389	691,127	554,111
Salted—					
All countries	62,273	79,036	98,960	98,385	116,635
Miscellaneous, preserved—					
United States	106,488	91,018	106,303	100,227	95,118
Uruguay	19,029	23,327	16,517	28,913	16,037
Australia	10,386	16,045	23,735	15,044	26,638
Other countries	34,262	24,516	37,114	35,933	35,632
Totals	170,165	154,906	183,669	180,117	173,425
Total unenumerated and miscellaneous preserved	1,010,503	1,025,908	1,094,484	1,211,433	1,105,788
Total meats	21,070,324	21,637,067	23,580,442	23,440,495	25,488,970

The chief sources of the British overseas supplies of meat are thus shown to be North and South America and Australasia. Roughly speaking the largest quantities of beef go from Argentine, of mutton from Australia and New Zealand and of pig meat in the shape of bacon and hams from Canada and the United States. Argentine indeed furnishes not less than 82.6 per cent. of the total beef imports into the United Kingdom. Denmark also sends large supplies of bacon, this commodity both in that country and in Canada fitting in well with the dairying industry.

Other points of general interest concerning the British meat supply are to be found in Mr. R. H. Rew's excellent report for 1912 to the Secretary of the British Board. It appears the number of cattle imported alive has been declining year by year since 1905, when 565,000 were landed. In 1911 the number had fallen to 200,000, but in 1912 it fell to less than one-fourth of that, the total received being only 49,000. Imports of live sheep, which practically ceased in 1910, but recovered slightly in 1911, fell again to 15,000 in 1912. In 1895 the total imported was over 1,000,000, and for the four succeeding years it was about two-thirds of that number.

The decadence of the trade in animals "on the hoof" has been balanced by the increased imports of animals "in the carcass." The quantity of fresh beef imported in 1912 exceeded, for the first time, 8,000,000 cwts., having doubled in ten years: The imports of fresh mutton amounted to over 5,000,000 cwts., being somewhat less than in 1910 and 1911, but over 1,000,000 cwts. more than they were ten years ago.

From the detailed tables there appears to have been no indication of a falling off in the relative position of home supplies, about 59 per cent. of the total meat supply being produced in the United Kingdom on the average of the period 1909–1913. The significant and possibly from the consumer's point of view somewhat ominous fact is that oversea supplies show insufficient expansion; or, to speak more precisely, that the contraction of the supplies from North America on which reliance has for so long been placed has not been balanced by the increased supplies from the Southern hemisphere to the extent necessary to meet the increased demand. During the past six years the quantity of dead meat received from the United States has declined from 6¾ million cwts. in 1907 to less than three million cwts. in 1912, while those from Canada have fallen from nearly one million cwts. to less than half a million cwts. Supplies from New Zealand have shown no expansion, and practically the whole of the increased supplies have come from Argentine and Australia.

The course of the import trade in dairy produce may be briefly shown by the following figures, giving in thousands of cwts. quinquennial averages from 1891 to 1910, with those of the two latest years:—

Year	Butter 1,000 cwts.	Margarine 1,000 cwts.	Cheese 1,000 cwts.	Condensed Milk 1,000 cwts.
1891–5...	2,409	1,178	2,150	500
1896–1900	3,247	927	2,455	799
1901–5...	4,025	972	2,565	909
1906–10..	4,229	958	2,433	948
1911.....	4,303	944	2.348	1,155
1912.....	4,005	1,352	2,309	1,222
1913.....	4,139	1,518	2,297	1,252

WHEAT PRODUCTION

The figures, except where otherwise indicated, refer to official estimates furnished by the countries to the International Institute of Agriculture.

Countries	1914 Bushels	1913 Bushels	1912 Bushels
Europe—			
Austria.....	60,000,000 (b)	59,626,000	69,639,000
Hungary.....	133,156,000	168,249,000	184,644,000
Belgium.....	13,973,000	14,769,000	15,348,000
Bulgaria.....	45,930,000	60,627,000	63,750,000
Denmark.....	4,700,000	6,695,000	3,615,000
France.....	300,000,000 (b)	319,373,000	334,336,000
German Empire.....	152,000,000 (b)	171,077,000	160,225,000
Greece.....	5,600,000 (b)	4,000,000 (b)	7,360,000 (b)
Italy.....	169,444,000	214,407,000	165,721,000
Herzegovina and Bosnia.....	1,600,000 (b)	2,560,000 (b)	2,960,000 (b)

WHEAT PRODUCTION—Continued

Countries	1914 Bushels	1913 Bushels	1912 Bushels
Holland	5,380,000	5,082,000	5,515,000
Norway	400,000 (b)	324,000	331,000
Luxemburg	613,000	644,000	665,000
Portugal	8,000,000 (b)	5,600,000 (b)	5,600,000 (b)
Rumania	46,536,000	84,192,000	89,413,000
Russia-in-Europe	687,431,000	835,829,000	623,761,000
Serbia	8,000,000 (b)	11,024,000 (b)	16,353,000 (b)
Spain	120,314,000	112,402,000	109,784,000
Sweden	7,619,000	9,330,000	7,797,000
Switzerland	3,314,000	3,509,000	3,178,000
Cyprus and Malta	2,400,000 (b)	2,400,000 (b)	2,400,000 (b)
United Kingdom	62,374,000	56,696,000	57,402,000
Total, Europe	1,838,784,000	2,148,415,000	1,929,797,000
North America—			
United States	891,017,000	763,380,000	730,267,000
Canada	158,223,000	231,717,000	224,159,000
Mexico	8,000,000 (b)	10,400,000 (b)	12,800,000 (b)
Total North America	1,057,240,000	1,005,497,000	967,226,000
South America—			
Argentine	200,000,000 (b)	131,542,000	187,393,000
Chile	16,000,000 (b)	11,986,000	12,800,000 (b)
Uruguay	8,000,000 (b)	5,600,000 (b)	5,461,000
Total South America	224,000,000	149,128,000	205,654,000
Asia—			
British India	314,608,000	362,693,000	370,515,000
Japan	23,842,000	25,928,000	25,692,000
Russia-in-Asia	120,978,000	138,003,000	103,270,000
Persia	13,600,000 (a)	14,400,000 (a)	16,000,000 (a)
Total Asia	473,028,000	541,024,000	515,477,000
Africa—			
Algeria	20,000,000 (b)	36,848,000	27,172,000
Egypt	28,000,000 (a)	38,427,000	30,900,000
The Cape	2,400,000 (a)	2,400,000 (a)	2,400,000 (a)
Tunis	2,205,000	5,515,000	3,858,000
Total Africa	52,605,000	83,190,000	64,330,000
Australasia—			
Total Australasia	33,200,000	119,303,000	97,150,000
Grand Total	3,678,857,000	4,046,557,000	3,779,634,000

(a) From Dornbusch's Floating Cargoes List.
(b) From Broomhall's Corn Trade News.

The foregoing table shows the total production of wheat in 1914 to be 367,700,000 bushels less than in 1913 and 100,777,000 bushels less than in 1912. In Europe alone there is a decrease of 309,631,000 bushels from last year. There were decreases of 67,996,000 bushels in Asia, 30,585,000 in Africa and 86,103,000 in Australasia. The crop of North America was 51,743,000 bushels greater than last year's and South America shows an increase of 74,872,000 bushels.

The figures in the 1914 column for Argentine, Chile, Uruguay and Australasia refer to the crops at present being harvested. The estimate of 314,608,000 bushels for British India is for the crop harvested in March 1914; the crop of next March is estimated by Broomhall as 376,000,000 bushels.

PRODUCTION OF OATS

Countries	1914 Bushels	1913 Bushels	1912 Bushels
Great Britain and Ireland	181,859,000	189,588,000	189,036,000
France	312,942,000 (a)	336,049,000	334,205,000
Russia-in-Europe	800,284,000	1,040,554,000	916,014,000
Russia-in-Asia	113,649,000	125,449,000	89,888,000
Belgium	46,816,000	45,136,000	33,023,000
Germany	625,884,000	629,871,000	552,464,000
Austria	165,000,000 (a)	173,606,000	157,572,000
Hungary	85,241,000 (b)	99,737,000	75,582,000
Italy	25,249,000	40,912,000	26,642,000
Holland	18,784,000	19,875,000	17,151,000
Denmark	43,633,000	53,755,000	48,765,000
Norway	9,835,000 (a)	12,870,000	12,731,000
Sweden	54,873,000	93,945,000	82,604,000
Spain	28,775,000	23,843,000	21,680,000
Switzerland	4,896,000	4,792,000	3,780,000
Rumania	22,059,000	34,496,000	20,101,000
Bulgaria	12,968,000	12,968,000	11,347,000
Algeria	9,835,000 (a)	16,916,000	11,624,000
Canada	311,426,000	404,669,000	391,629,000
United States	1,141,060,000	1,121,768,000	1,418,337,000
Totals	4,015,068,000	4,480,799,000	4,414,175,000

(a) From Broomhall's Corn Trade News.

(b) Excluding Croatia and Slavonia.

	1913–14	1912–13
Argentine	66,139,000	109,064,000

NOTE—The world's production of oats in 1914 was 465,731,000 bushels less than in 1913 and 399,107,000 bushels less than in 1912.

BARLEY PRODUCTION

Countries	1914 Bushels	1913 Bushels	1912 Bushels
Great Britain and Ireland	66,180,000	68,367,000	60,632,000
France	.....	47,939,000	50,588,000
Russia-in-Europe	475,550,000	557,581,000	455,957,000
Russia-in-Asia	.....	16,544,000	12,325,000
Belgium	4,232,000	4,217,000	4,253,000
Germany	156,000,000 (a)	168,711,000	159,926,000
Austria	.....	80,384,000	78,382,000
Hungary	69,087,000	82,783,000	72,119,000
Italy	6,917,000	10,803,000	8,403,000

BARLEY PRODUCTION—Continued

Countries	1914 Bushels	1913 Bushels	1912 Bushels
Holland	3,210,000	3,121,000	3,346,000
Denmark	22,847,000	27,356,000	24,981,000
Norway	.....	3,369,000	3,247,000
Sweden	13,059,000	16,912,000	14,156,000
Spain	73,698,000	68,773,000	59,995,000
Serbia	.....	4,167,000 (b)	5,250,000 (b)
Switzerland	533,000	450,000	427,000
Rumania	23,461,000	27,650,000	20,934,000
Bulgaria	16,075,000	16,075,000	18,372,000
Japan	102,758,000	102,430,000	99,574,000
Algeria	.....	50,031,000	32,887,000
Canada	34,591,000	48,319,000	49,398,000
United States	194,953,000	178,189,000	223,824,000
Totals	.....	1,584,171,000	1,458,976,000
Totals for countries reported in 1914	1,263,151,000	1,381,737,000	1,276,297,000

(a) From Broomhall's Corn Trade News.
(b) From Dornbusch's List.

	1913–14	1912–13
Argentine	8,038,000	4,460,000

NOTE—The production of barley in 16 countries in 1914 was 118,586,000 bushels less than in the same countries in 1913 and 13,146,000 bushels less than in 1912.

RYE PRODUCTION

Countries	1914 Bushels	1913 Bushels	1912 Bushels
Great Britain and Ireland	2,143,000 (a)	1,714,000 (a)	1,714,000 (a)
France	47,143,000 (a)	50,056,000	46,746,000
Russia-in-Europe	938,830,000	962,370,000	1,010,983,000
Russia-in-Asia	30,954,000	30,017,000	33,075,000
Belgium	23,138,000	22,463,000	21,313,000
Germany	445,713,000 (a)	481,174,000	456,604,000
Austria	107,143,000 (a)	106,473,000	117,113,300
Hungary	49,782,000	56,004,000	56,853,000
Italy	5,260,000	5,590,000	5,285,000
Holland	14,635,000	16,642,000	15,852,000
Denmark	18,654,000	17,005,000	18,894,000
Norway	1,286,000 (a)	972,000	1,041,000
Sweden	24,185,000	22,266,000	23,076,000
Spain	29,012,000	27,916,000	18,867,000
Switzerland	1,740,000	1,752,000	1,705,000
Serbia	857,000 (a)	1,286,000 (a)	1,757,000 (a)
Rumania	2,256,000	3,732,000	3,604,000
Bulgaria	9,842,000	10,826,000	12,401,000
Japan	42,857,000 (a)	48,856,000 (a)	42,000,000 (a)
Canada	2,258,000	2,300,000	2,428,000
United States	42,778,000	41,381,000	35,664,000
Totals	1,840,466,000	1,910,795,000	1,926,975,000

(a) From Broomhall's Corn Trade News.

NOTE—The world's production of rye in 1914 was 70,329,000 bushels less than in 1913 and 86,509,000 bushels less than in 1912.

PRODUCTION OF POTATOES

Countries	1914 Bushels	1913 Bushels	1912 Bushels
Great Britain and Ireland	272,516,000	283,913,000	213,783,000
France	.....	477,115,000	552,074,000
Russia-in-Europe	.....	1,274,452,000	1,356,824,000
Russia-in-Asia	.....	32,622,000	58,564,000
Belgium	.....	117,614,000	100,000,000
Serbia	.....	.....	2,154,000
Germany	1,680,000,000 (a)	1,988,611,000	1,844,863,000
Austria	.....	424,498,000	686,307,000
Hungary	.....	179,135,000	
Italy	62,464,000	65,742,000	56,313,000
Denmark	28,551,000	39,306,000	28,889,000
Holland	.....	91,958,000	121,878,000
Norway	.....	25,876,000	29,825,000
Sweden	57,642,000	75,368,000	65,765,000
Canada	85,672,000	78,544,000	84,885,000
United States	450,921,000	331,525,000	420,647,000
Totals for 7 countries reported in 1914	2,637,766,000	2,863,009,000	2,715,145,000

(a) From Broomhall's Corn Trade News.

NOTE—The production of potatoes in 7 countries in 1914 was 225,243,000 bushels less than in the same countries in 1913 and 77,379,000 bushels less than in 1912.

WHEAT

Net Imports and Exports

Countries	Imports Aug. 1st to July 31st, 1913–14 Bushels	Imports Aug. 1st to July 31st, 1912–13 Bushels	Exports Aug. 1st to July 31st, 1913–14 Bushels	Exports Aug. 1st to July 31st 1912–13 Bushels
Great Britain and Ireland	185,125,000	213,505,000	.....	.....
France	54,503,000	45,871,000	.....	.....
Russian Empire	.....	.....	163,267,000	99,987,000
Belgium	51,036,000 (a)	51,272,000	.....	.....
Serbia	.....	.....	.....	3,535,000 (b)
Germany	73,225,000 (a)	78,067,000	.....	.....
Austria-Hungary	15,224,000	79,000	.....	.....
Italy	50,569,000	77,272,000	.....	.....
Denmark	3,436,000	5,012,000	.....	.....
Holland	15,419,000	13,497,000	.....	.....
Norway	.....	591,000 (b)	.....	.....
Sweden	6,705,000	6,622,000	.....	.....
Spain	14,633,000	2,909,000	.....	.....
Switzerland	18,074,000	19,463,000	.....	.....
Rumania	.....	.....	45,642,000	42,604,000
Algeria	.....	.....	4,214,000	793,000
Canada	.....	.....	114,773,000	94,893,000
United States	.....	.....	107,329,000	99,775,000
Argentine	.....	.....	102,275,000 (c)	96,601,000 (c)
Australia	.....	.....	42,923,000 (c)	32,599,000 (c)

(a) July 1st to June 30th. (b) The year 1912. (c) The calendar years 1913 and 1912.

WHEAT FLOUR

Net Imports and Exports. The figures refer to the equivalent quantities of wheat at the rate of 4½ bushels of wheat to one barrel of flour.

	Imports		Exports	
Countries	Aug. 1st to July 31st 1913–14	Aug. 1st to July 31st 1912–13	Aug. 1st to July 31st 1913–14	Aug. 1st July 31st 1912–13
Great Britain and Ireland	Bushels 25,709,000	Bushels 24,613,000	Bushels	Bushels .....
France	.....	.....	230,000 (a)	1,070,000
Belgium	.....	.....	2,448,000 (a)	3,184,000
Germany	.....	.....	7,885,000 (a)	9,130,000
Austria-Hungary	.....	.....	148,000	1,423,000
Italy	.....	.....	4,817,000	4,512,000
Denmark	3,509,000	2,751,000	.....	.....
Holland	9,359,000	9,605,000	.....	.....
Norway	.....	2,453,000 (b)	.....	.....
Sweden	514,000	445,000	.....	.....
Rumania	.....	.....	5,887,000	5,396,000
Canada	.....	.....	20,457,000	19,963,000
United States	.....	.....	52,309,000 (c)	51,886,000
Australia	.....	.....	10,188,000 (b)	7,745,000 (b)
Argentine	.....	.....	5,718,000 (b)	6,660,000 (b)

(a) July 1st to June 30th.
(b) The Calendar years 1913 and 1912.
(c) Sept. 1st to Aug. 31st.

TRADE IN OATS

Net Imports and Exports

	Imports		Exports	
Countries	Aug. 1st to July 31st, 1913–14	Aug. 1st to July 31st, 1912–13	Aug. 1st to July 31st, 1913–14	Aug. 1st to July 31st, 1912–13
Great Britain and Ireland	Bushels 54,207,000 (a)	Bushels 68,746,000	Bushels	Bushels .....
France	38,504,000	28,196,000	.....	.....
Russian Empire	.....	.....	34,750,000	49,452,000
Belgium	7,375,000 (a)	11,639,000	.....	.....
Germany	.....	7,150,000	25,077,000 (a)	.....
Austria-Hungary	177,000	901,000	.....	.....
Italy	4,113,000	11,022,000	.....	.....
Denmark	4,901,000	3,129,000	.....	.....
Holland	8,114,000	8,416,000	.....	.....
Norway	.....	774,000 (b)	.....	.....
Sweden	836,000	4,062,000	.....	.....
Switzerland	11,258,000	12,600,000	.....	.....
Rumania	.....	.....	17,196,000	1,036,000
Canada	.....	.....	34,974,000	13,233,000
United States	.....	.....	18,483,000	31,405,000
Argentine	.....	.....	57,499,000 (b)	58,100,000 (b)
Australia	46,000 (b)	3,403,000 (b)	.....	.....

(a) July 1st to June 30th.
(b) The calendar years 1913 and 1912.

TRADE IN BARLEY

Net Imports and Exports

	Imports		Exports	
Countries	Aug. 1st to July 31st, 1913–14 Bushels	Aug. 1st to July 31st, 1912–13 Bushels	Aug. 1st to July 31st, 1913–14 Bushels	Aug. 1st to July 31st, 1912–13 Bushels
Great Britain and Ireland	47,169,000 (a)	53,709,000	.....	.....
France	7,128,000 (a)	2,779,000	.....	.....
Russian Empire	.....	.....	201,866,000	145,341,000
Belgium	15,112,000 (a)	14,306,000	.....	.....
Serbia	.....	.....	.....	704,000 (b)
Germany	171,235,000 (a)	132,335,000	.....	.....
Austria-Hungary	.....	.....	8,064,000	10,070,000
Italy	690,000	861,000	.....	.....
Denmark	.....	.....	323,000	2,987,000
Holland	13,321,000	6,632,000	.....	.....
Norway	.....	3,764,000 (b)	.....	.....
Sweden	.....	.....	69,000	5,000
Rumania	.....	.....	18,941,000	11,847,000
Canada	.....	.....	12,294,000	13,482,000
United States	.....	.....	9,651,000 (c)	18,092,000

(a) July 1st to June 30th. (b) Calendar year 1912. (c) Sept. 1st to Aug. 31st.

NOTE—Attention is drawn to the large quantities of barley imported by Germany, most of which came from Russia.

TRADE IN RYE

Net Imports and Exports

	Imports		Exports	
Countries	Aug. 1st to July 31st, 1913–14 Bushels	Aug. 1st to July 31st, 1912–13 Bushels	Aug. 1st to July 31st, 1913–14 Bushels	Aug. 1st to July 31st, 1912–13 Bushels
France	1,727,000 (a)	2,391,000	.....	.....
Russian Empire	.....	.....	28,361,000	17,169,000
Belgium	6,681,000 (a)	4,865,000	.....	.....
Germany	.....	.....	24,695,000 (a)	23,165,000
Austria-Hungary	1,356,000	572,000	.....	.....
Italy	224,000	486,000	.....	.....
Denmark	8,443,000	7,676,000	.....	.....
Holland	11,604,000	9,777,000	.....	.....
Norway	.....	6,660,000 (b)	.....	.....
Sweden	4,115,000	4,592,000	.....	.....

(a) July 1st to June 30th.
(b) The calendar year 1912.

VALUES OF IMPORTS AND EXPORT OF CANADA

To March 31	Exports	Imports
1914	$478,997,928	$633,564,174
1913	393,232,057	675,517,045
1912	315,317,250	547,482,190
1911	297,196,365	461,951,318
1910	301,358,529	375,833,016

ANIMALS AND THEIR PRODUCE

Imports of Canada

Articles	1913 Quantities	1913 Values	1914 Quantities	1914 Values
Animals, living—				
Cattle.....No.	8,661	$ 242,956	9,727	$ 269,757
Horses.....No.	27,118	2,569,826	8,029	1,253,364
Sheep.....No.	229,771	627,677	210,095	643,990
Hogs.....lb.	.....	2,879	9,245	5,928
Fowls, domestic, pure-bred...	27,118	45,026	28,761	58,238
Dogs.....No.	956	40,103	888	38,098
Other animals.....	170,969	.....	.....	233,728
Total animals, living....	3,699,436	.....	.....	.....
Bones, crude, and bone dust, etc.....cwt.	99,271	150,009	120,025	213,168
Bristles.....lb.	252,418	223,263	257,251	214,998
Eggs.....doz.	13,240,111	2,783,665	11,274,036	2,630,364
Feathers.....	.....	190,389	.....	566,919
Fur skins, not dressed.....	.....	5,599,199	.....	2,241,877
Fur skins, whole or partially dressed.....	.....	1,362,825	.....	64,100
Grease and degras.....lb.	2,434,441	111,447	1,828,930	87,067
Grease, rough.....lb.	13,684,437	895,957	12,166,081	794,477
Hair, cleaned or uncleaned...lb.	816,352	114,048	.....	109,194
Hair, horse.....lb.	287,815	168,879	126,258	102,140
Hatters' furs.....	.....	115,867	.....	92,689
Hides and skins, raw.....lb.	64,856,440	13,305,471	39,016,872	8,777,694
Honey.....	652,817	66,781	538,560	55,985
Milk, condensed.....	261,555	21,171	453,417	38,416
Oils, animal.....gal.	117,653	64,840	67,410	39,665
Provisions—				
Butter.....lb.	7,989,269	2,081,989	7,317,259	1,823,994
Cheese.....lb.	1,495,758	302,153	1,512,108	279,223
Lard and lard compound..lb.	13,835,493	1,520,450	7,089,650	790,025
Meats—				
Bacon and hams, shoulders and sides.....lb.	13,554,394	1,946,278	7,113,029	1,182,899
Beef, salted.....lb.	1,018,857	69,057	6,204,842	442,540
Canned meats and canned poultry and game.....	2,228,484	393,174	1,220,227	227,655
Extracts of meats, fluid beef, etc.....	.....	327,173	.....	456,009
Mutton and lamb.....lb.	5,649,118	543,779	5,610,812	566,794
Pork.....lb.	10,204,676	1,026,277	12,102,244	1,204,505
Poultry and game.....	.....	402,634	.....	293,513
Other meats.....lb.	4,778,216	630,301	4,007,851	595,959
Total meats.....	.....	5,338,673	.....	5,069,874
Rennet.....	.....	66,392	.....	53,261
Sausage casings.....	.....	162,474	.....	162,662
Silk, raw, etc.....lb.	.....	354,147	106,732	351,969
Wax, bees.....lb.	116,173	36,255	88,762	29,131
Wool.....lb.	9,209,170	2,063,028	.....	.....
Other articles.....	.....	290,081	.....	.....

ANIMALS AND THEIR PRODUCE

Exports of Canada

Articles	1913 Quantities	1913 Values	1914 Quantities	1914 Values
Animals, living—				
Cattle	44,296	$2,237,135	219,848	$7,929,016
Horses	2,156	529,045	5,686	1,431,603
Hogs	654	5,162	28,207	446,430
Sheep	13,760	81,253	20,711	132,408
Poultry	.....	97,082	.....	137.493
Other	.....	.....	.....	73,569
Total animals, living	.....	2.949,677	.....	.....
Animal products—				
Meats—				
Bacon lb.	36,212,190	5,350,845	23,860,536	3,763,330
Beef lb.	1,570,979	135,111	13,617,707	1,165,295
Hams lb.	2,476,654	322,669	1,890,658	270,049
Muttons lb.	45,914	6,742	65,167	10,804
Pork lb.	521,533	57,960	1,968,941	216,810
Poultry, dressed or undressed	.....	20,867	.....	74,270
Game, dressed or undressed	.....	3,139	.....	4,973
Tongue lb.	6,098	914	.....	.....
Canned	254,937	26,718	654,681	97,031
All other	3,126,799	338,971	2,850,642	267,177
Total meats	.....	6,263,936	.....	5,879,739
Bones cwt.	44,085	64,503	65,183	94,586
Butter lb.	828,323	223,578	1,352,875	342,953
Casein lb.	349,865	15,342	270,486	11,071
Cheese lb.	155,216,392	20,697,144	144,910,780	18,948,511
Eggs doz.	147,419	35,519	485,202	92,322
Furs, dressed	.....	15,306	.....	21,814
Furs, undressed	.....	5,150,833	.....	5,682,459
Grease and grease scraps lb.	4,302,192	116,172	4,113,580	116,363
Glue Stock	.....	27,472	.....	26,719
Hair	.....	205,999	.....	243,196
Hides and skins, other than fur	.....	7,196,250	.....	9,221,150
Horns and hoofs	.....	26,976	.....	16,634
Honey lb.	5,027	598	19,508	2,083
Lard lb.	46,638	5,517	193,222	18,399
Milk and cream, condensed, canned or preserved lb.	335,849	25,554	9,379,382	671,042
Milk and cream, fresh gal.	828,299	752,535	1,631,205	1,337,413
Oils, neats-foot and others, gal.	194,525	222,746	240,358	247,143
Sausage casings	.....	324,805	.....	372,121
Sheep pelts No.	43,075	43,812	.....	145,686
Tails No.	.....	.....	.....	17,963
Tallow lb.	1,995,433	123,424	2,349,450	158,055
Wool	976,606	193,500	2,878,029	658,428
All other	.....	103,395	.....	145,703
Total other animal products	.....	35,570,980	.....	.....

AGRICULTURAL PRODUCE

Imports of Canada

Articles	1913 Quantities	1913 Values	1914 Quantities	1914 Values
Bread stuffs	72,244,780	$2,339,503	22,451,473	$968,002
Grain and products of beans bush.	400,848	777,375	177,434	349,330
Indian corn	9,877,198	6,212,531	1,056,546	740,768
Oats	207,281	83,316	61,974	26,189
Peas bush.	166,894	360,583	125,972	267,669
Wheat bush.	616,395	549,617	133,370	115,695
Other grains bush.	127,301	86,678	53,494	36,805
Total grains	11,395,917	8,070,100	1,608,790	1,536,456
Bran, mill feed, etc	.....	70,947	.....	30,167
Cereal foods	.....	353,211	.....	346,761
Indian or corn meal bbls.	55,754	176,804	51,034	168,818
Oatmeal lb.	95,274	3,347	37,914	1,925
Wheat flour bbls.	59,081	267,917	55,207	239,883
Other grain products	.....	221,777	.....	129,892
Total grain products	.....	1,094,030	.....	117,639
Broom corn	.....	377,462	.....	324,590
Cane and rattan, not manufactured	.....	59,091	.....	68,551
Cider gal.	4,762	2,705	5,877	3,307
Cocoa beans, not roasted, crushed or ground lb.	6,613,083	903,446	3,291,257	447,026
Cocoa nuts No.	4,472,968	112,212	3,325,753	94,812
Fibre, Mexican cwt.	2,465	27,050	1,857	20,317
Fibre, vegetable cwt.	8,811	73,933	7,450	70,817
Florists' stock	.....	293,418	.....	319,667
Fruit, dried, not including nuts—				
Apples lb.	339,758	16,520	259,034	15,576
Currants lb.	12,217,006	655,735	10,670,300	545,213
Dates lb.	3,983,050	208,938	4,371,230	243,194
Figs lb.	4,421,294	233,045	3,277,450	186,226
Prunes lb.	8,942,599	466,868	10,592,068	550,175
Raisins lb.	24,423,150	1,349,076	21,664,379	1,242,253
Other dried fruits lb.	5,527,385	365,815	4,275,201	278,151
Nuts, all kinds	18,234,794	1,686,948	.....	.....
Total dried fruits	78,089,036	4,982,945	55,109,662	3,060,788
Fruits, green—				
Apples bbls.	320,325	837,134	330,907	1,104,302
Bananas bunches	2,145,423	2,368,762	2,635,099	2,663,453
Berries of all kinds	.....	581,754	.....	.....
Cherries lb.	971,619	103,038	1,084,797	120,397
Cranberries bush.	49,853	131,590	24,543	133,078
Grapes lb.	6,247,527	380,798	7,712,447	490,128
Oranges, lemons and limes	.....	4,156,756	.....	4,338,086
Peaches lb.	14,579,147	330,599	12,137,209	353,483
Pineapples No.	4,129,662	303,841	4,272,285	345,130
Plums bush.	151,650	267,580	123,531	316,561
All other	.....	389,256	.....	.....
Total fruits, green	.....	9,851,108	.....	.....
Fruits, preserved	.....	787,828	492	782
Hay ton	36,472	485,564	19,923	228,023

AGRICULTURAL PRODUCE—Continued

Imports of Canada

Articles	1913 Quantities	1913 Values	1914 Quantities	1914 Values
Hemp, dressed or undressed..cwt.	64,990	$ 381,797	55,572	$ 448,970
Hops.....lb.	1,658,113	522,398	1,957,042	162,578
Malt.....bush.	134,234	112,053	10,219,021	238,373
Oils, vegetable.....gal.	4,664,593	2,382,265	.....	.....
Oils, vegetable.....lb.	1,200,404	107,108	.....	.....
Pickles.....gal.	707,214	456,546	.....	.....
Plants and trees.....	.....	236,703	.....	437,296
Seeds, garden, field, etc.....	.....	1,343,364	.....	1,339,435
Seed, flax.....lb.	327,376	11,422	1,277	2,906
Seeds, all other.....	.....	279,454	.....	.....
Total seeds.....	.....	1,634,240	.....	.....
Straw.....ton	1,151	10,026	.....	.....
Sugar, maple and maple syrup,lb.	24,634	2,719	23,092	2,249
Tobacco, unmanufactured...lb.	22,153,588	5,719,755	17,598,449	5,109,641
Vegetables.....	.....	3,242,214	.....	2,885,538
Other agricultural products....	.....	2,379,003	.....	.....

Exports of Canada

Balsam.....	.....	$7,377	.....	$22,708
Cider.....gal.	187,219	22,266	151,073	19,737
Flax.....cwt.	2,350	24,176	6,065	46,369
Fruits—				
Apples, dried.....lb.	3,199,539	213,831	6,084,976	411,980
Apples, green or ripe....bbls.	1,324,769	4,047,806	948,098	3,467,838
Berries, all kinds.....	.....	100,019	.....	107,780
Canned or preserved.....	.....	220,786	.....	407,362
All other.....	.....	96,741	.....	407,741
Total fruit.....	.....	4,679,183	.....	4,802,701
Grain and products of—				
Barley.....bush.	6,455,975	3,851,660	13,596,322	6,799,527
Beans.....bush.	3,759	9,826	13,332	32,134
Buckwheat.....bush.	223,833	118,575	172,802	120,353
Indian Corn.....bush.	21,301	15,075	64,216	43,592
Oats.....bush.	10,478,554	5,067,950	35,042,845	13,403,456
Peas, whole and split...bush.	94,546	209,572	143,487	264,675
Rye.....bush.	26,160	14,908	228,029	145,244
Wheat.....bush.	93,166,009	88,608,730	126,478,585	123,627,058
Other grains.....	101,170	45,048	10,611	10,377
Totals grains.....	110,571,307	97,941,344	175,750,229	144,446,416
Bran.....cwt.	1,662,338	1,603,003	2,078,213	1,790,312
Cereal foods.....	.....	2,015,675	.....	2,171,689
Flour of wheat.....bbls.	4,478,043	19,970,689	4,832,310	20,581,682
Indian meal.....bbls.	2,239	. 7,767	3,939	14,639
Oatmeal.....	188,987	837,079	111,537	488,643
Meal, all other.....	5,153	17,836	2,042	7,534
Malt.....bush.	23,006	15,723	4,337	4,256
Total flour, meal and malt.	4,697,428	20,849,094	4,954,165	21,096,754
Hay.....ton	394,208	3,950,058	191,590	1,791,017
Hemp.....cwt.	.....	.....	200	191
Hops.....lb.	223,625	42,407	284,979	64,353
Maple Sugar.....lb.	1,154,635	104,324	1,925,343	159,619

AGRICULTURAL PRODUCE—Continued

Exports of Canada

Articles	1913 Quantities	1913 Values	1914 Quantities	1914 Values
Maple syrup.....gal.	3,846	$ 4,151	5,205	$ 5,284
Seeds—				
Clover.....bush.	69,149	738,377	120,155	1,109,015
Flax Seed.....bush.	10,123,693	16,448,899	22,186,355	26,734,601
Grass.....	117,621	124,949	110,894	906,756
All other.....	.....	44,831	.....	103,333
Total seeds.....	.....	17,357,056	.....	28,853,705
Straw.....ton	5,574	29,170	5,118	28,964
Tobacco leaf.....lb.	90,382	24,410	250,412	102,219
Trees, shrubs and plants.....	.....	24,905	.....	35,646
Vegetables, canned or preserved	.....	24,959	.....	21,927
Potatoes.....bush.	1,019,716	749,363	1,980,869	1,127,561
Turnips.....bush.	1,353,810	164,565	1,707,062	309,582
All other.....	.....	85,223	.....	127,256
All other agricultural products..	.....	442,952	.....	582,019

CANADA'S DEBTS

In 1912 Sir Frederick Williams-Taylor, General Manager of the Bank of Montreal, estimated the total outstanding indebtedness of Canada to Great Britain as £430,449,000. On the day of the outbreak of the war, 4th August, 1914, this had been increased to £545,546,849. This is made up as follows:

	1914
Dominion Government.....	£67,021,608
Provincial Governments....	27,892,816
Municipal.....	52,307,879
Railways.....	286,049,451
Industrial.....	87,275,095
Miscellaneous.....	25,000,000
Total.....	£545,546,849
	Or $2,655,000,000

At 4½ per cent. the interest charge is $120,000,000. How are we going to meet this annual charge unless we produce more for export? And every day of war adds to the above amount. Here is a national financial problem that the farmers must help solve.

The following statements have been compiled by "The New York Times" (1st January, 1915):

	Credits voted	Number of troops	Number of casualties
Germany.....	$2,500,000,000	4,350,000	1,740,000
Austria-Hungary.....	2,000,000,000	3,500,000	1,400,000
France.....	3,040,000,000	4,000,000	1,600,000
Russia.....	3,000,000,000	5,400,000	2,160,000
Great Britain..... / Belgium.....	1,650,000,000	1,500,000	600,000
	$12,190,000,000	18,750,000	7,500,000

Estimate of Funds and Losses (not including property) to Dec. 31st, 1914

	Gifts and relief funds	Loss in wages	Loss in trade
Germany.....	$100,000,000	$2,175,000,000	$1,500,000,000
Austria-Hungary.....	10,000,000	1,750,000,000	249,000,000
France.....	170,000,000	2,000,000,000	45,000,000
Russia.....	10,000,000	2,700,000,000	50,000,000
Great Britain.....	250,000,000	500,000,000	100,000,000
	$540,000,000	$9,125,000,000	$1,944,000,000
Grand total.....			$23,799,000,000

ENGLAND—"God Save the King"

God save our gracious King,
Long live our noble King,
God save the King!
Send him victorious,
Happy and glorious,
Long to reign over us,
God save the King!

O Lord, our God, arise,
Scatter his enemies,
And make them fall.
Confound their politics,
Frustrate their knavish tricks;
On Thee our hearts we fix,
God save us all.

Thy choicest gifts in store,
On him be pleased to pour,
Long may he reign.
May he defend our laws,
And ever give us cause,
To sing with heart and voice,
God save the King!

FRANCE—"The Marseillaise"

Ye sons of freedom, wake to glory!
Hark! hark! what myriads bid you rise!
Your children, wives and grandsires hoary,
Behold their tears and hear their cries.
Shall hateful tyrants, mischief breeding,
With hireling hosts, a ruffian band,
Affright and desolate the land
While peace and liberty lie bleeding?
To arms, to arms, ye brave!
The avenging sword unsheath;
March on! march on! all hearts resolved
On victory or death.

Now, now the dangerous storm is rolling,
Which treacherous kings, confederate raise;
The dogs of war let loose, are howling,
And lo! our fields and cities ablaze;
And shall we basely view the ruin
While lawless force, with guilty stride,
Spreads desolation far and wide,
With crimes and blood his hands imbruing?

With luxury and pride surrounded
The vile, insatiate despots dare,
Their thirst of power and gold unbounded,
To meet and vend the light and air;
Like beasts of burden they would load us,
Like gods would bid their slaves adore;
But man is man, and who is more?
Then shall they longer lash and goad us?

O Liberty, can man resign thee,
Once having felt thy generous flame?
Can dungeons, bolts or bars confine thee,
Or whips thy noble spirit tame?
Too long the world has wept, bewailing,
That falsehood's dagger tyrants wield;
But freedom is our sword and shield,
And all their arts are unavailing.
To arms! to arms, ye brave!
The avenging sword unsheath;
March on! march on! all hearts resolved
On victory or death.

RUSSIA—National Anthem

Lord God, protect the Czar! Powerful and mighty,
May he in glory, in glory reign.

Chorus—

Lord God, protect the Czar! Powerful and mighty,
May he in glory, in glory reign.

He is our guiding star great in peace and war,
Our faith's true protector, long live the Czar.

Chorus—

He is our guiding star great in peace and war.
Our faith's true protector, God save the Czar.

BELGIUM—The Walloons' National Song.

"We are proud of our little country,
Far and wide one speaks of its children;
For industry it stands in the first rank,
And in art it is as glorious.
Our land is small, but it is rich in names of noble men;
We have all the liberties we can want;
That is why we are proud to be Walloons.

"When one reads the history of our past
One wonders at every page.
Pride swells our hearts when we think of the glories
Of our forefathers, who never knew fear.
It is to them we owe the peace we have enjoyed;
They crushed our enemies beneath their heels.
They have been called the most valiant that ever were,
And that is why we are proud to be Walloons.

"Little country, thou hast such nobility,
We love thee, although we do not boast.
When people attack thee tears come to our eyes,
And our hearts beat strong and heavily.
But have no fear; live joyously,
The arms and hearts of thy sons are strong,
Quick to answer as our thoughts,
And that is why we are proud to be Walloons."

INDEX

MISCELLANEOUS:

Trade of Canada:

"I do not know when the war will end;
I do know when it will begin—in May next."

Lord Kitchener.